Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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With the Editor

THIS ISSUE OF INDUSTRIAL FINISHING—the third number in the magazine's fourth year of existence—is the largest so far published. Twenty pages have been added, making INDUSTRIAL FINISHING now 120 pages inside the covers—and this New Year's number is not a special edition. The remarkable increase in advertising carries deep significance. It shows that manufacturers of finishing materials, equipment and supplies see in 1928, an attractive volume of potential business, and each concern is bidding for its share.

Finishing has taken on added importance in several manufacturing industries and this calls for more investigation into the merits of materials and equipment which may help to produce finishes of lasting beauty and protective durability, at lower cost and in less time than formerly. INDUSTRIAL FINISHING serves as an excellent low-cost medium through which these objectives may be attained.

The increased advertising space—necessitating the purchase of more reading matter to balance up—has resulted from something more than strength in the publisher's sales organization and ability in the journal's advertisers' service department. It is a striking endorsement of the magazine's well-rounded value in every respect—in the character of its editorial contents, the quality of its circulation, its general make-up, convenient size, and in a number of other features which are recognized and appreciated by the industry that INDUSTRIAL FINISHING serves.

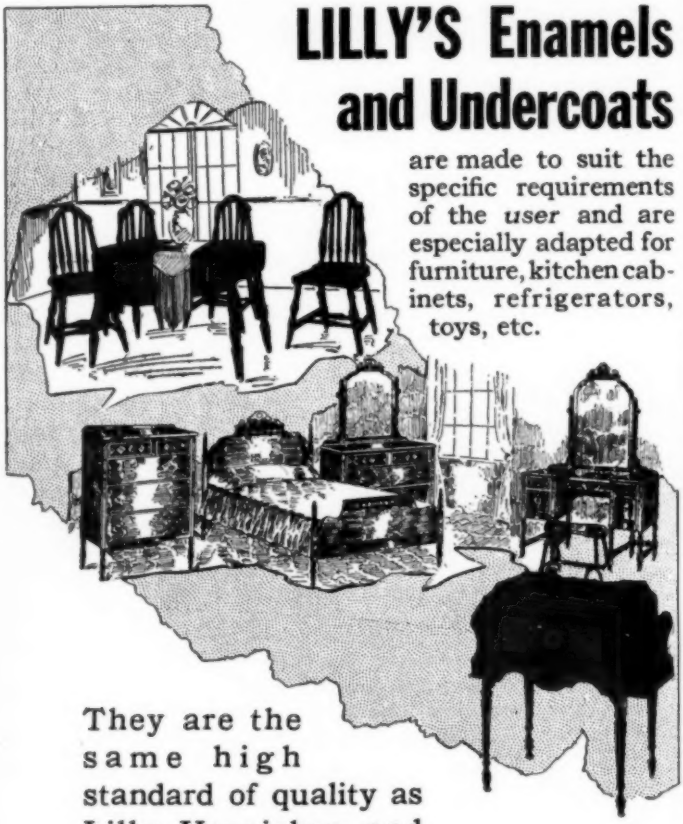
Every effort is being made in every department of this organization to continually improve INDUSTRIAL FINISHING to keep it abreast of the rapid progress in modern industrial finishing materials, equipment and methods.

W. H. Rohr

Managing Editor

LILLY'S Enamels and Undercoats

are made to suit the specific requirements of the *user* and are especially adapted for furniture, kitchen cabinets, refrigerators, toys, etc.



They are the same high standard of quality as Lilly Varnishes and Lacquers and our comprehensive system of testing results in a uniformity that provides a dependable source of supply for the users.

"This article has been O. K'd. by one of the leading lacquer manufacturers. It will help the buyers of lacquers to understand the product."—

Joseph M. Verderosa

How Modern Lacquer is Made

Describing clearly what materials are used and what processes are employed in the production of modern nitro-cellulose lacquers with added hints on how to use lacquers for best results

By Joseph M. Verderosa

PYROXYLIN-BASE finishing materials differ from ordinary oil-base materials such as paint, varnish, oil enamel, etc., in both their chemical and physical properties. Oil-base materials dry slowly by oxidation, and although drying dust free in about 10 hours and hard enough for recoating in about 24 hours, they remain chemically active for months. The oil continues to absorb oxygen during this period and the film becomes hard and brittle, causing it to craze and crack.

Pyroxylin-base materials on the other hand dry dust free in a few minutes and harden in from two to six hours, due to the rapid evaporation of solvents into which the pyroxylin or nitro-cellulose is dissolved. Since both of these last mentioned ingredients remain inactive, the film produced by pyroxylin materials is thoroughly stable when dry, and therefore quite permanent. The film or finish produced by true pyroxylin-base materials is not affected by temperature or climatic changes. Ordinary acids and alkaline solutions such as battery acids and strong scouring and cleaning solutions have no effect upon it. Water or live steam will not injure the film. It will not become sticky or tacky in a humid atmosphere. Water, grease and wax cannot penetrate it.

A pyroxylin film is tougher and more durable than that produced by any other form of finishing materials. It will not scratch white, nor dust, flake or chip off, and will withstand successfully an amount of knocking and banging that would ruin an ordinary finish. The appearance of a pyroxylin finish is always attractive for the reason that, being stable, it does not become dingy with age; further, the film is so smooth that dirt does not adhere to it. Its beauty is easily maintained, as grime and finger prints are easily removed with a damp cloth.

Lastly, although pyroxylin lacquers are perhaps a little more expensive per gallon, they are quite economical. The rapidity with which they air-dry cuts down the cost of finishing.

Outline of Operations

The manufacture of pyroxylin lacquers, as stated before, involve both physical and chemical

processes, which may be considered as four distinct operations:

1—Cotton purification.
2—Cotton nitration.
3—The addition of solvents.
4—The final mixing operation.

The main raw material used in the manufacture of pyroxylin finishes is cotton linters. Cotton linters are short fibers left attached to the seed after the long fibers, used in the manufacture of cloth, have been removed. These are received in bales at the lacquer factory. Other raw materials are solvents, plasticisers, resins, pigments and diluents.

Purifying the Cotton

The first operation then is purifying the cotton. This is done by first removing dust and loose foreign matter by an agitating machine (a sort of a duster) and then chemically purifying the material by boiling it in a strong alkaline solution. This operation is followed by a thorough washing in slightly acid water to remove all traces of the alkali. About 200 gallons of water to each pound of cotton are used in the process. The linters are next bleached with chloride of lime and, after another thorough washing, are shredded and dried to a moisture content of less than one-half of one percent.

Nitration of Cotton

Nitration is the next step. About 36 pounds of the linters are placed in a vat, called a dipping pot, which contains about 1,500 pounds of a mixture of sulphuric and nitric acids. The reaction takes from 15 minutes to an hour, depending upon the type of nitro-cellulose desired. Upon completion of this process, the cotton and acid mixture is dropped through a pipe leading from the bottom of the dipping pot to a centrifugal wringer on the floor below.

The acid mixture is whizzed out and pumped into storage tanks for future use. The nitrate cotton is dumped into a bowl of running water and floated to boiling tubs, where it is boiled in a slightly acid water to free it from various impurities. The moist nitro-cotton is then beaten in a pulping machine to break up the lumps. It is boiled again in a slightly alkaline water in poaching tubs. This is followed by another washing in clear water.

Since each charge of cotton varies in uniformity, it is necessary to blend many batches to insure a uniform product. This blending is done in a huge wooden tank containing thousands of gallons of water. About 12,000 pounds of nitro-cotton are mixed in tanks to insure absolute uniformity of the product.

Dehydration Process

The moist cotton is dehydrated with alcohol. In the dehydration process the cotton batches are charged into hydraulic presses and blocked into cakes through which the alcohol is forced. It is now ready to be dissolved in the solvents. The appearance of the nitro-cotton at this stage is the same as the bleached cotton linters. The only outward difference is that it seems rougher to the touch.

The utmost care is exercised throughout the entire process to insure production of the highest quality nitro-cellulose, since absolute purity and stability of the nitro-cellulose is necessary in the production of lacquers, the neces-

sity for care in manufacture is apparent.

Adding Solvent Mixtures

The nitrated, dehydrated cotton is now made fluid by the addition of solvent mixtures, thus forming what is termed the base mixture. The notable good solvents used are esters, ketones, keto-alcohols, ethers, hydroxy-alcohols and hydrocarbons. The quality of the solvent is determined by its ability to dissolve a large amount of the nitro-cotton and yet retain a manageable fluidity and by its rate of evaporation from the lacquer film. Too much attention, however, cannot be paid to the selection of the proper solvent combination for a lacquer in order that the film deposited will be perfectly homogeneous until it has set hard.

Now that the nitrated, dehydrated cotton is made fluid, it is passed through a filter press to remove any impurities still remaining in it. This is a long press with many penetrated iron plates between which filter paper is placed. The dissolved cotton is force-pumped through.

Gums; Plasticisers; Pigments

Then resins, gums, plasticisers and pigments are added. Resins and gums are added principally to give the base mixture adhesion. Those notably used are ester-gum, damar, cumar, kauri and pontianac. Plasticisers are added for flexibility. Those notably used are castor oil, dibutyl pthalate, refined camphor, diamyl pthalate and tricresyl phosphate. Ground pigments are added when a colored lacquer is desired. These are generally inert or zinc oxide pigments (lead is never used).

The gums, as a general rule, are dissolved in hydrocarbons and alcohols, and then are added in proportion to the base mixture. Plasticisers are added undissolved in proportion to the base mixture.

The pigments are first ground in grinding mills, of which there are three principal ones, namely, the pebble mill, the ball mill and the flat stone mill. Pebble-mill grinding is the most approved method. The grinding of pigments generally takes about 20 hours. About one to two pounds of pigment is used to one gallon of lacquer. The final mixing operations take place in machines of large capacity, and the discharge is the finished product.

Hints For the User

The average lacquers are thinned about 30 percent with diluents for good spraying results. Care should be taken that the right diluent is used, as all diluents will not mix well with all lacquers.

Lacquers will cover about 350-sq. ft. per gallon, sprayed on.

Two coats hide and build perfectly on any properly prepared surface.

Lacquers should be applied in full wet coats when sprayed on. The type of gun used should produce a fan-shaped spray. The range of air pressures recommended are 45 to 75 pounds at the end of the spray gun. The gun should be held about 5 or 6-in. from the surface. If it is held too far away a pebbled or mat finish will be produced, due to the partial drying of the atomized lacquer before it hits the surface.

If the gun is held too close, the pressure of air is apt to cause

"rings" in the film, and runs will occur due to the concentration of too much material at one point. If the gun is held too long in one place the material will pile up, causing it to run and sag.

Colors left remaining in cans for any amount of time should be thoroughly agitated, because the pigments settle rather quickly.

President Coolidge Invited to Furniture Market

At noon at the White House, Wednesday, December 14th, President Calvin Coolidge was presented with a beautiful scroll inviting him to attend the One Hundredth Grand Rapids Furniture Market, from January 3rd to 21st, 1928.

The presentation was made on behalf of the Grand Rapids Market Association by Thomas J. O'Brien of Grand Rapids, former U. S. Ambassador to Japan and Italy. With him were Robert W. Irwin, president of the Market Association; Charles M. Greenway, manager of the Grand Rapids Press; Claude T. Hamilton and Congressman Carl E. Mapes of Michigan.

Others on the presentation committee appointed by C. S. Dexter, executive chairman of the One Hundredth Market, were former United States Senator William Alden Smith of Michigan, Governor Fred W. Green of Michigan, Arthur H. Vandenberg, editor, Grand Rapids Herald, Louis J. De Lamarter, and Mayor Elvin Swarthout of Grand Rapids.

The invitation is a panel fashioned after an antique, lettered parchment scroll, with hand illuminated decorations in color. It was produced entirely with natural woods, measures 21½x30-in., and weighs 15-lbs. The background of the scroll is Michigan maple burl. The letters were individually cut from holly lavender amaranth, while the foliage decorations also are in amaranth.

The invitation to President Coolidge.

The decoration of the initial letter and the striping are in boxwood. The ribbon is composed of tulipwood. The background under the raised scroll is East Indian rosewood. The molded frame is Michigan early maple and the back of the panel is of Michigan maple burl.

The original sketch of the invitation was made by A. J. Dresler, Grand Rapids artist. The fabrication of this mardquetry panel by the Robert W. Irwin Company required more than one hundred hours of patient and exacting craftsmanship. Seven different woods were employed in the panel front, and exceptional skill was displayed in the color harmony and perfect matching of the several veneers.

The message is as follows:

"To the Honorable Calvin Coolidge, President of the United States of America.

"The Grand Rapids Market Association, representing the largest furniture market in the world, has the honor to invite you as its guest and to be the speaker at its principal banquet to be given to the furniture buyers from every state in the Union, at Grand Rapids, Michigan, upon any date you may find most convenient, between the dates of January second and twenty-fifth, Nineteen hundred twenty-eight, the occasion being the One Hundredth Furniture Market."

On the reverse of the scroll is affixed a descriptive copper plate.

Forecasting Color Trends

Regulating color selection by dealer experience of the previous year, as has been the practice of some automobile manufacturers, is only about 30 percent right, if the analysis of one of the important silk manufacturers may be taken as a criterion. At Babson's "National Business Conference," held in September in Wellesley Hills, Ward Cheney outlined the methods that his company employs in forecasting the color trends that are so important to the silk industry.

Color trends are of particular interest to those who have the problem of determining the colors for automobiles that are to reach the buyers three or perhaps six months hence, depending on the location of the dealer and the rate of his turnover. Feminine fashions and automobile colors now have so intimate a relationship that no manufacturer can afford to be ignorant of the color trends in the textile industry.

According to Mr. Cheney's charts, 30 percent of the buyers follow the latest fashions, about 40 percent are conservatives and 30 percent are "fashion laggards" like Pompey who fed on "abjects, orts and imitations, which out of use and staled by other men, begin his fashion." Each of these types of buyers must be taken into consideration by those who dictate the colors of the new cars, but it is equally important that these colors be used with discretion.

The artistic element is entering more and more into American automobiles, and any company that fails to appreciate this fact is not only a fashion laggard but is apt to find itself a hopeless laggard in the new-day commercial race.—*Autobody.*

New Armitage Lacquer

John L. Armitage & Co., Newark, N. J., announces a new nitrocellulose gloss lacquer, furnished in a variety of colors. An outstanding characteristic claimed for this new finishing material is that it levels out perfectly smooth after spraying, and dries with a mirror-like finish in deep brilliant gloss, requiring no rubbing or polishing. It is said to be adaptable to both wood and metal products.

Trade Outlook Report

An interesting and valuable pamphlet has just been issued by the U. S. Department of Commerce, covering the foreign and domestic trade outlook. It was prepared by Mr. Julius Klein, director, United States Bureau of Foreign and Domestic Commerce.

New Finishing Material Announced

"Haf-Co Velvet Lacquer" is a new product recently placed on the market by Wm. S. Hatten Co., 165 No. May St., Chicago, Ill. It is said to produce a clear, smooth, rubbed effect without expensive rubbing operations. The manufacturer claims that such objectionable results as gray or hazy effect, gritty or uneven surface, soft or rubbery film, and lack of uniformity of sheen are overcome when this finish is used.

What are safe and unsafe practices, and why.

Spraying from the Original Shipping Drum

Describing methods of feeding finish materials directly from shipping container to spray gun, and pointing out the danger involved in the pressure system—excepting when a regular pressure container is used

By F. C. Overhauser

IT IS the practice in many factories to spray varnish, clear lacquer and similar finishing materials directly from the steel drum in which the material is shipped from the manufacturer. This method is one of convenience only, as it eliminates the labor and possible loss of material incident to transferring the finishing material to pressure tanks or gravity-feed buckets.

Two systems are in use in large production factories for spraying directly from the drum. In one system the drum is elevated above the spray booth, either by placing it on the floor above, or by hoisting it to an elevated platform. The drum is connected to the material spray hose and, when the bung is removed from the drum, the same results are secured as though a gravity feed bucket were used.

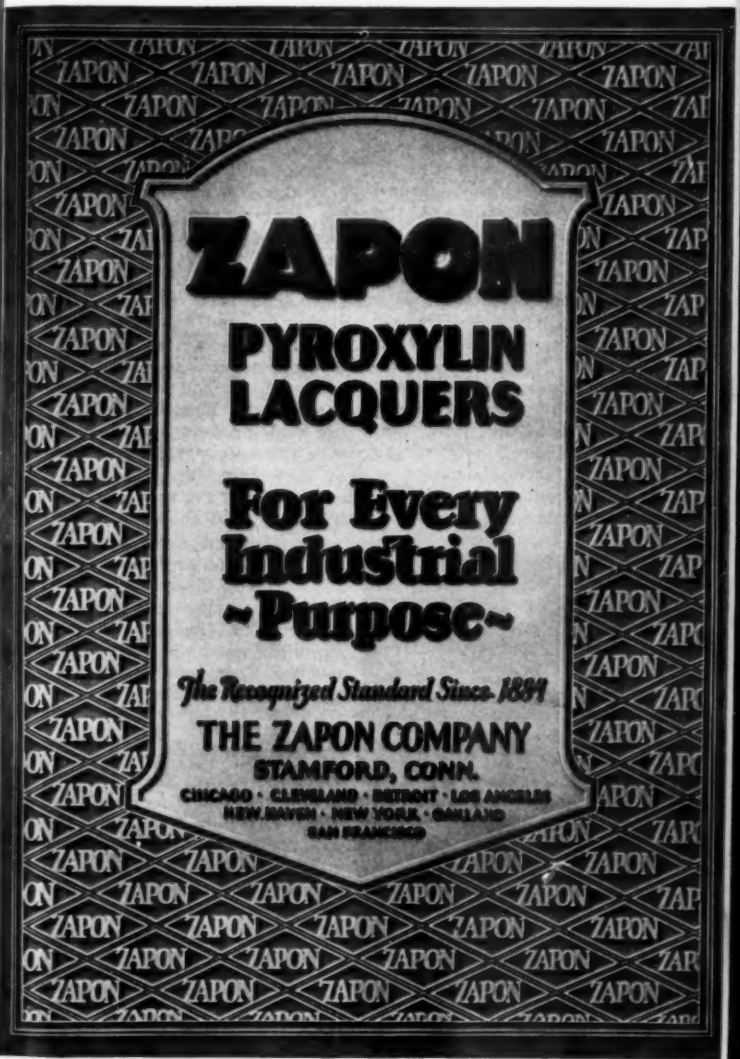
The other system makes use of an air line leading into the drum. This places the material under pressure and forces it through the material hose to the spray gun. This second method gives good results when the proper air pressure is used and suitable safety appliances are attached to the drum. There are certain phases which must be fully understood, however, to avoid the possibility of trouble.

Should varnish be sprayed directly from the drum? Is it safe to use pressure on the original steel drum in which varnish and other materials are shipped, in order to force the varnish to the spray gun where compressed air can atomize it and throw it on the work to be coated? If it is reasonably safe to use this method, then what pressure limits are advisable?

These are questions that every user of varnish or lacquer in drum quantities should consider, because there is undoubtedly some advantage in the way of time-saving and convenience, if finishing material can be safely and successfully transferred by this method. On the other hand, the danger of injuring life and damaging property, in case the drum bursts, makes it imperative to use absolutely safe methods.

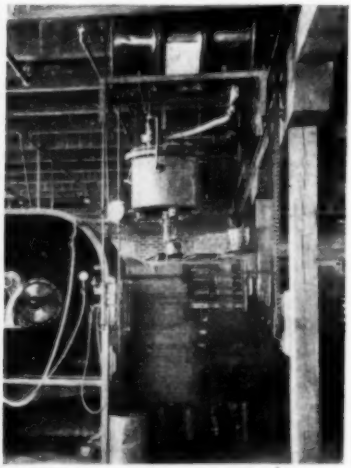
Results of Survey

To arrive at a satisfactory answer to these questions, the concern with which this writer is connected, wrote to a total of 16 manufacturers of spraying equipment, asking for full information. No answer was received


ZAPON
PYROXYLIN
LACQUERS
For Every
Industrial
~Purpose~
The Recognized Standard Since 1894
THE ZAPON COMPANY
STAMFORD, CONN.
CHICAGO · CLEVELAND · DETROIT · LOS ANGELES
NEW HAVEN · NEW YORK · OAKLAND
SAN FRANCISCO

from three of these letters. Of the remaining 13 spray-equipment manufacturers, six saw no danger in spraying directly from the drum, provided proper safety appliances are used and the pressure is not too high. Six other manufacturers thought it unwise to use pressure directly on the drum under any circumstances, chiefly because of the danger of so-called "safety appliances" not functioning properly, coupled with the fact that the human element cannot always be depended upon to see that so much pressure, and no more, is applied.

One manufacturer failed to say anything definite, but his letter inclined toward the view that steel drums are not strong enough to be safe when used as a pressure material container. In other words, the opinion of the spray gun manufacturers is fairly evenly divided, with practically all of them agreeing that very careful steps must be taken to see that the pressure in the drum is kept at low limits in order to be safe.



Here the shipping container is hoisted to the ceiling and material flows by gravity from the original container to the pressure container, from which it is fed by pressure to the spray gun.

Analyzing the answers to our letters still more thoroughly, only three manufacturers out of the total sixteen strongly recommended spraying from the drum by the pressure method, and none of these three recommended more than 10 to 15 pounds pressure. At least one of the manufacturers now furnishing attachments for spraying varnish directly from the drum, plainly realizes the danger accompanying such procedure and not only sets the safety valve to pop off at 10 pounds, but also furnishes a reinforcing frame, to help hold in the head of the drum.

To point out some of the dangers accompanying the spraying of varnish directly from the drum, even when such safety appliances as pop-off valves are supplied, we quote from a letter received from one of the spray gun manufacturers:

Dangers Pointed Out

"Replying to yours of the 14th, inquiring about the best process for spraying varnish and other materials directly from the drum without the use of a pressure tank, we can only say that the best way of doing this is not to do it at all. It is not safe to put pressure on a tank that is not especially constructed as a pressure tank, and shipping drums are not so constructed.

"We would consider it extremely dangerous to use a drum for that purpose. While one might get by with it in a good

IMPERVIOUS VARNISH COMPANY

Manufacturers of

VARNISHES, PYROXYLIN LACQUERS AND ENAMELS

42 WOOD STREET

PITTSBURGH, Pa.

Dec. 29th, 1927

Industrial Finishing,
#810 Wulsin Building,
Indianapolis, Ind.

Gentlemen:-

Appreciating the valued service "Industrial Finishing" is rendering to all interested in finishing with LACQUERS, BAKING ENAMELS and JAPANS, we desire to present the merits of IMPERVIOUS PRODUCTS to your readers.

Will you therefore please accept our contract enclosed for full page advertisement, twelve issues beginning January, 1928. Copy will be furnished later.

Wishing you and your staff a Successful and Happy New Year, we are

Yours very truly,

IMPERVIOUS VARNISH COMPANY

A. E. Dann

Vice-President

AED:
AB

—Advertisement

many cases, it might, and probably would result in a very serious accident. Investigation would probably develop that using a drum for that purpose would be severely criticised by the underwriters. The average shipping drums are not built to stand pressure—they are merely built to be containers.

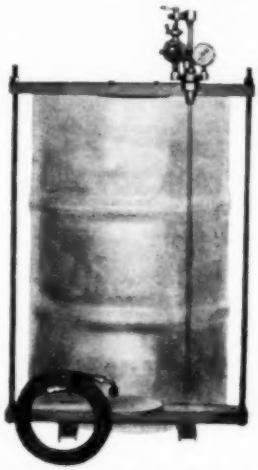
"The labor supply—that is, the class of labor which we are obliged to employ from time to time about our plant—makes it absolutely imperative that fool-proof equipment be placed in the hands of our employes; fool-proof characteristics are far more important than any other one particular.

"The average employee understands very little about air pressure; very little about release valves, regulators and control valves; very little about the possibilities of pop-off valves getting stuck, and right here let me say that any kind of a valve that is supposed to work automatically is a very poor thing around paint and varnish. In the rather varied experience I have had, I have seen some very serious accidents on account of safety valves being depended upon, when the working mechanism of the valve had become inoperative on account of paint and varnish."

Safety Valves May Fail

We quote still further from another letter:

"None of these drums is guaranteed to withstand a pressure and the writer has seen occasions where the drums have gone at 20 pounds. Anybody that recommends or puts 50 pounds pressure on one of these steel drums takes chances and can do a lot of damage if the drum goes up.



When the shipping drum is subjected to pressure, head blocks, cross bars and tie rods should be used as shown here to hold in the drum heads.

"Underwriters do not favor the subject at all, and as we understand it, 15 pounds pressure is all that is recommended. A safety pop-valve on a varnish drum is out of the question—it cannot be depended upon at all. If the varnish got into the seat of the valve, gumming it up, it may require a whole lot higher pressure than that at which it is set before going off.

"You cannot always depend upon the regulators; you may set this at 15 pounds and run it for weeks, but should any dirt lodge underneath the seat, it would allow the pressure to climb on the tank, going up as high as the pressure on the air line itself, which would mean bursting the drum."

Evidence of Excessive Pressure

In spite of these arguments against the use of pressure on

SPRUANCE QUALITY

A Spruance Finish *for Every Process*

Stains—Liquid and Powder. Newest shades. Uniform.

Fillers—Paste Wood Fillers. Firm foundation. Dry hard and quickly. Wipe off easily.

First Coaters—Spirit or Pigmented. Prepared especially for the woodworking trade.

Drawer Coaters—Satin finish. Do not raise grain, require no sanding, dry rapidly.

Lacquers—Q. E. D. Furniture Lacquers. Quick drying, tough and durable. Clear and Colored.

THE GILBERT SPRUANCE CO.
PHILADELPHIA

"A FINISH FOR EVERY PURPOSE"

steel shipping drums, quite a number of furniture manufacturers and others are spraying directly from the drum. Many drums come back to varnish and lacquer manufacturers badly bulged and leaking at the seams, indicating that too much pressure has been used in them.

Several users of varnish have had the experience of drums bursting or springing such a bad leak that all the contents were lost. In one case in Chicago, a workman was killed instantly and a spray operator was seriously injured, when a safety valve on a drum failed to work and the pressure in the drum became so high as to explode it.

In some instances concerns that have these unfortunate accidents, expect the varnish manufacturer to stand good the loss, claiming that the drums were defective. Obviously, no varnish manufacturer can guarantee how much air pressure his drums will stand. He uses the drums to hold his varnish until it reaches the customer, but he does not pretend to furnish a package that will stand up under the severe pressure conditions that are often applied to them.

Indeed, the varnish user who bursts a varnish drum by air pressure should feel it his duty to pay the varnish manufacturer for destroying or rendering useless one of his drums.

A pressure of five to eight pounds per square inch on a varnish drum could surely produce no serious damage, but as pointed out by many of the letters received from spray-equipment manufacturers, it is not possible to make sure that the pressure is going no higher than these limits. "It is better to be safe than sorry." Perhaps the factor of safety could be increased by mounting the control valve and pop-off valve on the spray booth in such a way that varnish or other foreign material cannot come in contact with them and clog them up.

Shipping Containers Only

The Interstate Commerce Commission ruling for steel drums used for shipping liquids specifies a certain gauge metal be used, depending upon the capacity of the container, but says nothing about the bursting strength. For example, a steel shipping drum having a capacity of between 35 and 58 gallons, must be made of 18-gauge metal and be water tight when it is used for shipping other than dry or solid materials.

Each drum is to be stamped with the name or identifying symbol of the manufacturer, the gauge of the metal in its thinnest part, the capacity and the year of manufacture. Thus, 16-55-20 would indicate a 55-gallon drum made of 16-gauge metal in 1920. Where pressure is used on steel drums, a careful watch should be kept on these symbols to see how thick the metal is, and how long the drum has been in use.

Many varnish manufacturers are now using steel, one-trip drums that are made of lighter metal and which are supposed to be used only once as a shipping container. It would be unwise to use pressure on one of these single-trip drums. The single-trip containers are easily identified by the symbol "S. T. C." (single-trip container), which is stamped or embossed on each drum.

balanced

Balanced Finishing Insures Sale-Ability

Finishing departments throughout the industrial field do superior work when operating on balanced schedules.

Balanced methods give everything you could want in appealing finishes and much more than you thought possible.

Products finished in balanced technique are covered by sales insurance.

Learn More About This Service

The Grand Rapids Varnish Corporation maintains a Studio Service for analyzing the needs of finishing departments and placing them on a balanced basis—with balanced routine, balanced formulas—balanced treatments. Scores of manufacturers have found this service highly beneficial to production and sales. It is yours for the asking. A letter will bring details.

Grand Rapids Varnish Corporation

Main Offices, Studio Service and Factories

Grand Rapids, Michigan

Use Pressure Tank

Now that pressure-feed tanks of 10 or 20-gallon capacity are available, and so constructed as to withstand more than 100 pounds air pressure, it would undoubtedly be safer and perhaps more economical to put enough varnish in one of these pressure tanks at one time to last all day. There would be another advantage also in this method of operation, in that any water, dirt, oil or other foreign material that might get into the tank from the air line would contaminate only a small amount of varnish, and would not spoil the contents of an entire drum.

Or Gravity System

Those who do not think it economical to use the smaller, specially constructed pressure tanks, can get good results with complete safety by using a gravity feed of varnish from the drum. This can be accomplished by having the drum of varnish on the floor above the spray booth, with a line running down to the spray booth through which the varnish can flow.

Where it is not feasible to do this, a platform can be built that will place the drum higher than the highest point at which the spray gun will be held when the varnish is being applied. A hand hoisting device can be rigged up to aid in getting the full varnish drum onto the platform. In either case, an air vent should be left open in the varnish drum so that the varnish can flow freely to the gun. This air vent should be closed at night to prevent unnecessary evaporation of the volatile thinners in the varnish.

Cheap Finishing Passé

For quite a long while cheap finishing has had quite a sway, but today the public is demanding better finishing and is willing to pay the price.

Recently a furniture manufacturer was asked why he finished his furniture so cheap looking; his answer (or excuse) was, "to meet the selling prices." The buyer, who had spoken, immediately told him to finish his products better, and he would receive better prices. "The days of cheap finishing have passed by," the buyer declared.—Joseph Cowan.

The most effective manner of using sandpaper, of any type, is learned largely through actual practice.

Marietta Finishes Exhibited Abroad

The Better Homes Exhibition in Glasgow, Scotland, where the Marietta Paint & Color Co. of Marietta, Ohio, will have an exhibit of Marietta finishes on American woods, will be visited by Mr. and Mrs. R. D. Pinkerton during January and February. Mr. E. W. Tickle of Liverpool, recently appointed Marietta representative in the British Isles, will be in attendance with Mr. Pinkerton.

Pyroxylin Enamel and Lacquer Book

D. Van Nostrand Co., Inc., 8 Warren St., New York City, announces a new and enlarged second edition of Dr. S. P. Wilson's book entitled "Pyroxylin Enamels and Lacquers." The new book contains 250 6x9-in. pages which are divided into 12 chapters and alphabetically indexed for convenient reference.

The contents include information on all materials entering into the manufacture of modern lacquers, lacquer formulas, and the practical use of lacquers. Dr. Wilson's clearness of expression in writing—well known to readers of "Industrial Finishing" magazine—makes the book especially interesting and easy to read. It is cloth bound, illustrated, and priced at $3.50.

Historic influences appear in some of the finest furniture exhibited.

At the Grand Rapids Market

Describing some of the outstanding furniture designs and color schemes seen at the 1928 Grand Rapids Furniture Market where some remarkable suites and individual pieces are exhibited

By J. C. Hertstein, Jr.

THE GRAND RAPIDS Furniture Market celebrates its one hundredth market anniversary this month. Manufacturers and their skilled designers have been working for months on new numbers and it is a consistent view, among those who have been privileged to see this new furniture, that some extremely high standards of beauty and value have been set.

It is especially seen this year that furniture building has become an art as well as an industry. A few of the new beautiful designs and models to be seen may be described briefly as follows:

Especially pleasing to the eye is a bedroom suite after the classic Heppelwhite design, made in harewood and walnut. The posts are in American walnut and drawer fronts and bed panels are in highly-figured matched walnut. Harewood is used in the frieze on the bureau, chiffonier, dressing table, table and beds, with an inlaid oval medallion.

Influence of Marot

When Louis XIV revoked the edict of Nantes in 1685, Daniel Marot, five year old son of an architect and engraver, was among those who fled to England and Netherlands for sanctuary. Daniel developed under the training of his father and others. Later he was employed by Andrew Charles Boulle, master of marquetry, for whom he designed much furniture.

Marot entered the service of William of Orange, designing among other things the audience chamber in William's palace and the market place at the Hague. He went to England and the Marot designs gradually assumed a combination of French, Dutch and English influence.

The most costly suite shown in the market is classified as William and Mary, but it is actually in the style of Daniel Marot, interpreting in its form its decorative motifs and its constructional features, the background of historical episodes that gave it birth. One finds French detail and English methods in the decoration, yet a decidedly Dutch feeling spread out over typically English proportions.

The pieces are walnut. An unusual effect is imparted, however, by the use of cherry burl on the aprons, while cross-grained walnut is used for the mouldings. Jasper oriental marble tops adorn the sideboard and server. The apron, legs and unique stretchers are intricately carved.

The table shows a blending of English, Dutch and French styles, tastes and interests in addition

to which the Spanish scroll foot on the table legs, as well as the chair legs, indicates the Spanish influence dating back to the Spanish occupancy of the Netherlands. The chairs are of carved walnut with cherry-burl seat rails. They are upholstered in Genoese velvet. Brass nail heads form a frame for the upholstering of the back.

The sideboard is in antiqued gold, and bears a painted arabesque decoration in colors taken from an old document of Marot. The interior of the cabinet is finished in silver luster, while decorations in colors adorn the backs of the doors.

Among the minor details are the hinges, lock plate, corners and coffer mounts of the china cabinet and draw pulls of chased brass. The cherub pull on the server is designed after the manner of Grindling Gibbon, the famous carver of the time.

Colonial Designs

Many furniture manufacturers are now concentrating on colonial furniture, bedroom suites, dining room suites, living room pieces, spinet desks, chairs and novelties—all representative of American furniture from the Pilgrim century to the nineteenth. In most cases, emphasis has been put on authentic reproductions from various sources.

Enameled Furniture

Very much enameled furniture, with Chinese decorations, is again being shown this year. Manufacturers seem to feel that this class or style of furniture has become standard from year to year. New color schemes are prevalent with some of the manufacturers, while others are holding to colors established in the past two years.

A "Malvern" Suite

A suite of walnut known as the Malvern, which is an adaptation of later Jacobean style, the buffet having been developed from a rare original in the Victoria and Albert Museum, London, is one of the interesting suites on exhibit. They are typical in detail from the intricate hand carvings and beautifully cut moldings to the shapely turnings and worn-off stretcher work. The floral ornaments were taken from a fine old chair.

In conclusion, I might state that it has been found that the furniture departments of department stores lead all others in volume. This is shown in a recent survey of sales volume, the total being 5.73 per cent of sales. Second comes silks and velvets; third, women's coats and fourth women's dresses. Stocks of furniture in department stores are turned over 2.62 times per year.

"Reed" Compressed Air Filter

An interesting circular has just been issued by the Reed Air Filter Co., Inc., Louisville, Ky., fully describing the "Reed" Air Filter for air compressors. The importance of filtering air, so that it will be free from all solid impurities before going into the compressor, is given prominence in connection with upkeep, long life and continuous satisfactory performance of this equipment.

Accessories Catalog for Finishers

A very complete catalog of 112 pages, profusely illustrated, covers the many items for finishers and painters that are handled by the Geo. E. Watson Co., 164 W. Lake St., Chicago, Ill. The catalog affords a broad selection from among many well-known and nationally advertised makes of finishing materials, accessories and equipment. A copy may be obtained free; ask for Catalog No. 47.

LACQUER IT WITH ZELLAC

ZELLAC

"People are Buying Beauty"

—says Babson

We borrow from Babson's Reports—"Color and line have become almost as essential as utility. Every product which goes to the consumer should be made as attractive as possible. THERE IS A DEFINITE VALUE TO BEAUTY, and it is not only desirable but absolutely essential for every one catering to the public to recognize it."

There's a business sermon of vast importance—a sermon which has been voiced by two generations of Zellers. In that time Zeller skill in the production and application of rapid-drying lacquers and lacquer enamels has contributed greatly to the recognition of Beauty as a potent selling factor for your products.

The modern manufacturer chooses wisely when he chooses Zellac Products—and the free consultation service with which we back up Zellac Products. Let us advise you how to obtain beauty and durability of finish at lowest cost.

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ZELLER BUILDING
20 East 49th Street New York

Stock Rooms and Offices at:
Chicago: 551 West Lake Street
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Spray system and overhead hangers solve difficult finishing problem.

Equipment for Spray Finishing Garden Furniture

How brush painting was replaced by modern spray finishing and what equipment was provided to handle production in a new plant manufacturing a variety of lawn and garden furniture

By Donald A. Hampson

THE USUAL run of woodwork is handled in a conventional manner when it comes to the finishing department. No matter if the job at hand is a clock, a tea room chair or a coffin lid, the same spray booth is apt to be found in use and the same system of racking the goods as fast as the articles are sprayed.

What has become known as "garden furniture" includes a variety of woodwork that differs quite materially from the general run. Starting with a white painted tub 12-in. square, the line includes seats, chairs, trellices, fence sections, arbors, etc.—units that are long and high or short and stubby. Finishing these products is quite different from handling ordinary production work that goes on a turntable inside the spray booth.

Not Quantity Production

Garden furniture is a line wherein the units are not apt to be turned out by thousands—rather, the average piece of furniture is more apt to be made up in lots of a dozen or so. Under such circumstances, the average finisher might say: "Well, then we might as well get busy with a brush and pail; it will be cheapest and best in the end."

That there is a better way is proved by the example and experience of the Unadilla Silo Co., which makes some of the decorative yard and garden furniture that is adding so much charm to our outdoor life. The manufacture of these pieces and sets forms a good part of the Silo company's business, and this work includes the application of

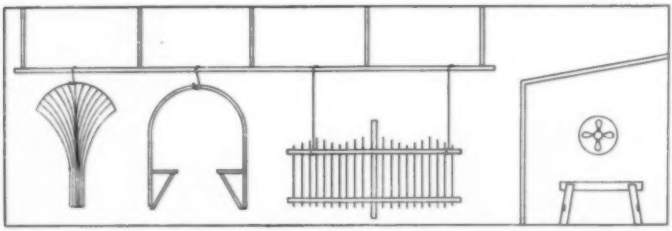


Fig. 1—Interior of finishing room showing relative location of spray booth and overhead rail from which freshly-sprayed articles are hung.

Standardization gives you the Best---at Low Cost!

SATISFIED users of Paasche air finishing equipment ask us, "How can you give such well-made and well-designed equipment at such low cost?"

Standardization—in the processes of manufacture, and in the design, possible only through the fundamental correctness of the principle of operation. That's the answer.

Standardization as a cost-cutting principle of manufacture became recognized only beginning with the World War. Standardization has been Paasche's guiding principle ever since the first Paasche airbrush was manufactured—over twenty years ago.

Paasche standardization gives you more than low first cost—it means savings in operating costs, greater production speed, and better work for you.

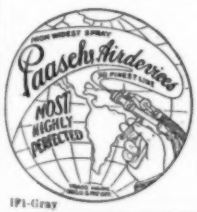
Paasche equipment is standardized—make it standard in your finishing room—and get finer finishing, at lower cost.

Write today for facts—in figures and pictures—why "It Pays To Standardize On The Paasche Line".

Most Universal Multiplehead Spraying Device Made

By the use of 33 sizes of multipleheads and 5 different types, all coupled to the same airbrush, an unlimited variety of finishing possibilities is opened up. By the mere change of a head you can use light or heavy, coarse or fine, hot or cold fluids. The floating tip is self centering on a hardened stainless steel needle, standard for all heads. All parts, threads and heads are completely standardized and interchangeable.

This Paasche policy not only produces economy in the manufacture of these airbrushes, but it means greater convenience, greater efficiency, and lower investment for you, the user. Through standardization, Paasche gives you the best—at low cost!



IPI-Gray

Paasche Airbrush Co.

1921 Diversey Parkway, Chicago, Ill.

New York, 54 Dey St. Los Angeles, 411 Douglas Bldg.
San Francisco, 417 Market St. Cleveland, 418 Perry Payne Bldg.
Denver, 1531 16th St. Detroit, Woodward Ave. & Grand Blvd.
Pittsburgh, 3125 Preble Ave. Seattle, 248 Central Bldg.
Davenport, 213 W. 2nd St. Philadelphia, North American Bldg.
Cincinnati, Wade St., Flint St., and Southern Railroad
A. R. Williams Machinery Co., Toronto, Canada

a coating on every piece for protection and decoration.

Should the work be brushed, dipped or sprayed? Dipping was out of the question because of the size of the pieces and the small quantities of each. Spraying seemed to be somewhat in the same class. Accordingly, they were doing brush coating, although they realized its weaknesses.

New Plant Equipped

When a new factory building was erected, the management decided to take a plunge into the sea of better methods—finishing as well as millworking. A second-floor room approximately 50x50-ft. was assigned for assembling and finishing garden furniture. A modern spraying outfit was installed and the problem of handling the work was definitely faced. The methods developed and found to be best will be explained here.

A spray booth was placed in one corner of the room. This is what might be called the "built-in" type, since it is so constructed that two of its sides are in the angle of the building, and the framework is tied to the walls. Just outside of the booth are racks for hanging the furniture. (See Fig. 1.)

The booth is larger than usual. Outside the booth and at about the level of the roof are two overhead rails to which sprayed articles are hung to dry. Wood trestles support the piece of furniture inside the booth, and as fast as the pieces are sprayed they are picked up with hooks and carried outside for drying.

Two steel rails extend clear across the finishing room. These rails are flat bars of steel set on edge and having a load capacity far in excess of the needs, no matter how thickly the pieces are racked for drying. With these two rails spaced about 6-ft. apart, there is room for handling the odd-shaped pieces quite comfortably.

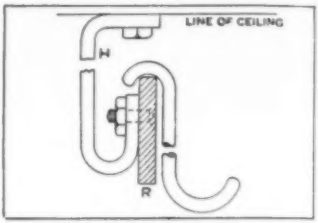


Fig. 2—Cross section of steel rail, showing how it is supported and how the hooks are positioned. The rail is ½ x 3 in. in cross section and the hanger "H" is ⅜ x 2½ inches.

Details of the construction are revealed in Fig. 2. This design is substantial and simple, and it involves only moderate cost. The use of steel hooks makes for speedy handling and minimum contact on the finished surfaces. With rails that are entirely clear on the top, due to the shape of the hangers, the hooks may be placed in any combination that suits the work—and this without interference.

The entire installation is a creditable one. It shows how one concern has met an interesting finishing problem and solved it in a modern way.

Cypress and fir are the woods used for most of Unadilla's furniture. Joints are all doweled and set in cold-water glue, this joinery forming a construction that is calculated to withstand severe outdoor conditions. Over all the surfaces two coats are sprayed—one of flat white paint and the other a semi-gloss in which the product goes to the

Pee Gee

BUILDING COATER No. 81

A transparent coater that builds as rapidly as a varnish film and has the durability which lacquer affords. Stains or fillers do not affect it.

Pee Gee Building Coater No. 81 is a true nitrocellulose lacquer that sprays easily and flows smoothly.

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user. Some articles, such as the rose trellis, have one or more posts that go into the ground. These ground sections are dipped in creosote for preserving.

Demand For Color

In a short article in one of the recent Convention Dailies of the American Paint Journal, G. A. LaValle, director of sales for Marietta Paint & Color Co., says:

"The demand for color is sweeping the country and it is getting to be almost a daily occurrence that one reads in this or that publication of the awakening of many industries to the need for color in selling and advertising their products.

"It is of particular significance that the producers of lumber have recently been showing unmistakable signs of becoming interested in selling their product in terms of its color possibilities, rather than just so many square feet of plain wood.

"It has taken a long time for the American home to develop from the cold-drab, austere dwelling of the Puritan, to the modern dwelling with its colorful exterior and interior.

"The modern color harmonies now reflected by the automobile, women's dress, furniture, rugs, draperies and awnings are rapidly spreading to floors, woodwork and walls. The rooms in the modern hotels are all decorated with different color schemes.

"The modern public is fighting hard to live amid colorful surroundings and if we in the paint and varnish industry take advantage of present conditions and advertise our products in line with the present trend of thought, great increases in business will undoubtedly be felt."

New Zealand News

According to Consular reports from Wellington, New Zealand, gum operators face the possibility of further legislative control over their business. Such further control will be maintained by the Government provided a new bill, which was recently introduced in the New Zealand Parliament, is enacted.

For scraping tools in the lacquer room, it is essential to use a metal that does not throw off sparks.

Aircraft Finishing Specifications

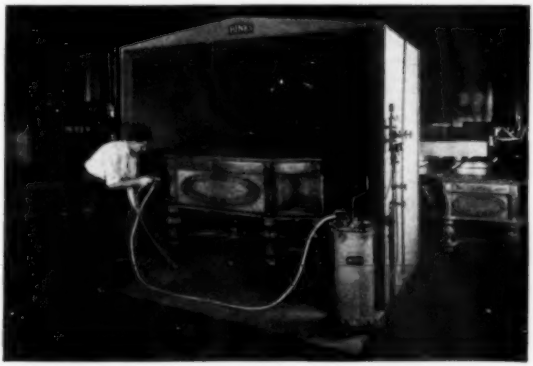
The second edition of "Specifications for Aircraft Finishing", published by Berry Bros., Inc., Detroit, is now being distributed free to those who are interested. It contains information covering the generally accepted practice for finishing airplanes today, having been prepared after investigating and developing successful methods now used in commercial airplane factories.

Changes in Ditzler Organization

In a division of sales executive duties, Mr. Neil A. Fleming, formerly manager of all Ditzler Color Co. sales activities, will devote his attention exclusively to sales work direction in the manufacturers' division. Mr. Ernest Hummitch will have charge of the distributor and export department. Mr. Fred J. Schneider will be assistant sales manager of the manufacturers' division.

Finishing Advisory Service

A painting and finishing consultation and advisory service, which is being used by architects from many States, is offered by the paint, varnish and lead division of E. I. du Pont de Nemours & Co. through the exhibit maintained in the rooms of the Architects Service Corporation at 101 Park Ave., New York City. The du Pont Exhibit is operated in conjunction with exhibits of all types of building materials.



To those who would make the most of a **New Idea** *!*

In the years past, so much attention has been given to Spray Guns and other important finishing accessories that the prime essentials of the spray booth have received little more than passing consideration by most users.

Now, when every operation counts, when lost time seriously affects costs, the Spray Booth had to come into its own. The finishing room could no longer survive as the bottle-neck of factory production. To this end Binks engineers have added another big contribution to finishing in the year just past: the "Triple-Baffle Plate" Spray Booth.

This advanced development now places the Spray Booth on an equitable plane with other modern finishing accessories. Its remarkable uniform exhausting ability, its trouble-free reliability, its cleaning virtues, etc., prove conclusively that the manufacture of a Spray Booth is an engineering problem rather than a tinsmith's job.

Not only have special rulings of governing bodies in various States been satisfied, but endorsements hitherto unknown in Spray-Booth Construction have been earned. In many progressive plants Binks "Triple-Plate Baffle" Spray Booths are replacing equipment that has formerly earned high consideration.

You, who analyze production schedules and costs, can hardly spend ten spare minutes more profitably than to read our "Bulletin No. 57" covering this modern equipment. Write for it today.

BINKS SPRAY EQUIPMENT COMPANY
Dept. A., 3114 Carroll Ave., CHICAGO, ILL.
Offices in Principal Cities

"At present we haven't a foreman in our finishing room, but the plant is functioning good as we are not very busy. I went through the department and found nearly 150 gallons of mixed enamels of all shades and colors, after the old foreman left. Most of these could not be used for anything but undercoat but I salvaged that much. You can bet your boots that the next man who takes charge will have to show me why he needs a lot of cans laying around the plant"—

Cleanliness in the Finishing Room

In some finishing rooms, a state of cleanliness is very difficult of attainment but it is a condition that is highly desirable from every standpoint —health, safety, efficiency and appearance

By E. F. Werner

THE old adage that "a man is known by the company he keeps," and a mechanic by the condition of his tools, is borne out by the statement that a finishing room foreman can be judged very quickly by the cleanliness and orderliness of his department and the equipment in his department.

It is true that since the great catastrophe in Detroit last year, the Underwriters' Bureaus in all cities have made strict examination of finishing rooms and, in some instances, have insisted upon almost complete new equipment and better installation features. There are many details of cleanliness that do not come strictly under the head of fire hazards, and as such, they are not reported upon by the inspector.

Note the inviting appearance of a clean finishing room.

The Visitor's Impression

First impressions are often the more lasting and more important ones. A visitor entering the finishing room is immediately impressed by the arrangement of material and equipment. Work scattered around haphazardly, aisles blocked, soiled rags thrown in corners, used sandpaper on the floor—these things do not make good impressions.

It is absurd for the foreman finisher to say, "Oh, we clean up at night, but during the day we are too busy to keep things straight." It is true that when the men are busy in production work, it is impossible to keep everything in perfect order, but waste cans, placed at intervals in the department, will easily take care of all waste material and

WONDER-FLAT

The Miracle Lacquer

Contains no grease or other fatty agents

Does not need agitating

May be sprayed direct from the drum

Quick Easy Economical

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Produces a dull rubbed finish effect

Positively does not cloud the work

If you'll test a sample, we'll send it

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cause little or no extra effort on the part of the men.

It is often necessary for the superintendent to take visitors through the plant. The finishing room, in nearly all instances, is the one that interests visitors the most. There is something fascinating to the layman about a modern finishing room. The various steps and procedure through which the article must go before the finished product is ready for the shipping room—these features are always of interest. A systematic layout of the work, with order in manipulation, is readily followed by the visitor. Lack of order and confusion does not leave the favorable impression that the superintendent would like to have the visitor take away.

In one particular plant that I have in mind, the work is of such nature that it is impossible to obtain a regular schedule of material through the finishing department. While some of the work consists of "stock items," most of the parts being made come under the head of "job" or "custom work." Part of the order may be finished in the cabinet room in a day or so, and the remainder — due to complicated turnings, carvings or assembly—will not reach the finishing room until three or four days later. Due to the length of time it takes for work to go through the finishing room, it would delay the order too long to wait for the entire lot to reach the finishing department before starting the job.

Each job or part of the job has an identification ticket. Why, in the name of good judgment, should a finisher or foreman use this ticket for a memorandum slip and then fail to return it to its proper place? If it is necessary to split a job—on account of the size of some parts requiring additional space—why should not the small tickets that are of necessity placed with these pieces, be gathered up and placed in a waste can, rather than carelessly thrown on the floor when not needed and then not cleaned up until night time?

Stock Room Conditions

In the past, the floor of the stock room where finishing materials were kept, had been actually filthy. Drippings from the barrels and measures had accumulated on the floor until it was more than 3-in. thick in some places. Men going into the room to draw materials, waded in shellac, lacquer or varnish, as the case might be. This floor had been taken up, a new one laid, metal placed over the floor and a trough placed underneath the bung of each barrel to catch the drippings.

Strict orders were issued as to the necessity of keeping materials off the floor, and the trough cleaned up. An attempt was made for a while to keep the place clean; then the old condition started again. Since warnings did not seem to bring results, it was necessary to discharge the man who took care of the room, and hire a new man. This man was told that failure to keep the room in first class condition meant loss of his job, without any other notice being given.

Result of Carelessness

At the production stations in the finishing department rubbing oil was spilled on the floor, pumice stone was used in larger quantities than was necessary

"You've got to show me!"

ROXALIN Lacaprimer

Like an oil primer—costs no more. The product you have been looking for as an undercoat for lacquer.

COVERS—hides wood surface in one coat.

FILLS—higher body than any lacquer undercoat on the market—weight, 11.5 lbs. per gallon.

STICKS—to wood, steel, composition.

FLOWS—pigment very finely ground—flows out to smooth silky surface. Reduces sanding labor.

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LONG ISLAND CITY

OUR SPECIAL "Show me" OFFER

Kindly ship at once via .....

..... 5 gallon kits ROXALIN WHITE LACAPRIMER @ $2.00 gallon.

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with the understanding that if these products are not completely satisfactory to us when applied as directed by you, we have the right to return them to you within 30 days from receipt of same, we to receive full credit and you to pay transportation both ways.

Our Order No. ..... Firm .....

Attention of ..... Address .....

N. B. Made in colors also, at slightly higher price.

and, of course, the mixture found its way to everything in the vicinity of the rubbing bench. Rags used in rubbing were not put in the waste can when used up, nor were they allowed to hang open in the air. Sea moss was used in larger quantities than necessary and was scattered over the floor.

Spray guns and such equipment as buckets used for gravity feed and hose, were not properly cleaned. This resulted in the plugging up of the lines. The supports on which articles to be sprayed were placed, were not cleaned off each night.

Any attempt to educate workmen to cleanliness is not an easy task. Sometimes it seems almost impossible to convince foremen and workmen that a large part of the trouble in their department is mechanical, resulting from carelessness and lack of cleanliness. It is generally impossible to use drastic measures on all of them, because this would mean hiring a new crew—with the probability that the new men would be equally as careless about keeping the place clean, and that they might not be as good in point of workmanship.

Realizing that the real up-to-date plants are clean and work does move forward in an orderly manner, the only thing to do is to continue the educational work, hoping that constant vigilance will, in time, show worthwhile results.

Notes On Shellac

Use shellac in thin coats. A little yellow added to a black will "jet it," that is, make a jet black color.

Never put a coat of shellac between two coats of varnish. This makes a very brittle finish, one that is sure to crack in time.

If white shellac is not soluble in alcohol, moisten the shellac with a quarter of its weight of ether, and let soak for a time. The solubility will then be completely restored.

A coat of shellac should always be used between the stain coat and filler. This prevents the filler from mingling with stain, which would produce a cloudy or muddy effect.

If shellac turns white under varnish, the finish may generally be restored by gently applying alcohol. This soaks through the varnish coat and re-dissolves the shellac. After this is accomplished, gently apply linseed oil. Let dry thoroughly and then rub down and give one coat of good varnish.

A thin coat of shellac on raw wood and sanded is better, I believe, for a lacquer enamel than a lacquer primer since, by this method, it only requires one sanding and can be finished with one coat of flat lacquer. When it is done, I think you have a finish far superior to any other lacquer finish. You will find that this is waterproof, tough and will not chip.—T. R. Nall.

Ditzler Color Co. Moves

Since Dec. 17th, the offices and factories of the Ditzler Color Co. have been located at 8000 West Chicago Blvd., Detroit.

Chain Hoist Literature

In new literature just released from the press, the Herbert Morris, Incorporated, Buffalo, N. Y., fully describes the Morris gravity-lowering chain block which, in addition to other uses, can be employed to advantage in handling kegs, barrels or steel drums. Interested concerns should address the Morris company for above mentioned literature.

Spray Finishers

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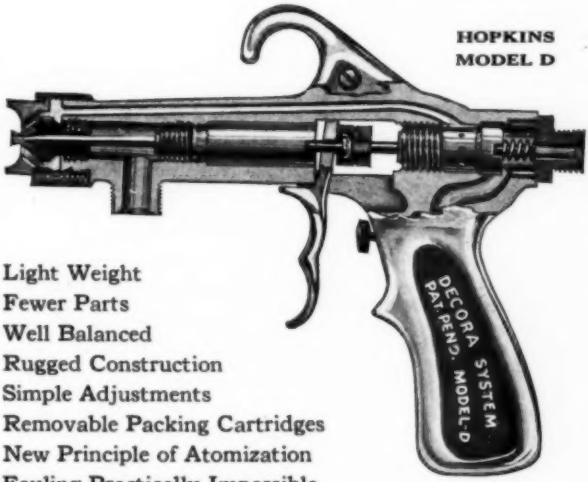

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448 Larkin Street
San Francisco, Cal.

"If anything could be done to minimize this tremendous waste, it would be of mutual benefit to all of us, on both sides of the fence"—
THE AUTHOR.

Time Wasted in Selling and Buying Finishes

Industrial finishing salesman calls attention to the expense involved in salesmen's calls, waits, interviews and transactions, and speculates on what might be done to improve present conditions

By C. Dan Youngs

ONE of the first steps in industrial finishing—in fact, the one which is absolutely essential before finishing of any article is begun—is composed of two elements. First there must be a sale or an offer of sale; next, there must be a purchase.

It is with the view of making these preliminary steps more economical to both the buyer and the seller, and of substantially reducing the almost inexcusable waste of time on the part of both the buyer and seller, that this article is written.

There is no question as to the existence of this waste. The manufacturer classifies it as "unavoidable expense" and absorbs it in his selling prices; the buyer classifies it as a nuisance and a time-waster. It also goes into his selling prices as an integral part of his costs. Naturally it is impossible for a salesman to sell everyone he calls on, and it is equally impossible for each buyer to make a purchase from every salesman.

If each party to the transaction would realize that he and his organization are of the utmost importance to the other, and that the time of each man in the transaction is equally valuable, there would be an actual saving in dollars and cents which would not only benefit both, but would also represent an economic saving of considerable value to the industries represented.

It is a fact beyond dispute that, under the present slipshod method of both buying and selling, there is a tremendous waste in the expenses incident to the casual call of a salesman, or the call which has in view no specific betterment in either prices or materials. Such calls not only waste the time of the salesman who is paid by the manufacturer, but they also waste the time of the purchaser. Thus buyer and seller are put to an unnecessary and unwarranted effort and expense.

If actual figures dealing with this waste could be ascertained, the sum in dollars and cents for the entire country would be amazing. Under present business conditions this loss naturally has to be absorbed into and by the ultimate costs which is a tax upon the ultimate consumer.

The question naturally follows, how or in what manner can this waste be eliminated? How can

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They are exhibiting gorgeously hued panels and pieces at the Furniture Shows this Winter, with the natural beauty of the Birds Eye Maple, accentuated and enriched by Marietta Finishes.

Maple is unquestionably coming into favor, and evidence of its returning popularity is found in the important lines, exhibited at the Shows this Winter containing Maple pieces.

At the Furniture Shows, notice the unusual color effects obtained with Marietta Finishes, and you will understand why, with the unequaled wearing qualities of these Finishes, The Trend is to Marietta.

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MARIETTA PAINT & COLOR COMPANY

Marietta, Ohio MARIETTA WOOD AND METAL FINISH SPECIALISTS **High Point, N.C.**

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it be minimized? What steps can be taken to overcome this burden upon both buyer and seller?

Sales Manager's Orders

Unquestionably the manufacturer of finishes desires to increase his sales as much as possible. To him, it is immaterial whether or not a prospect is at present buying from a competitor, or just starting without any finishing affiliations or preference towards any particular finishes. He cannot be blamed for this. Upon the shoulders of competition rests the whole framework of industry today, and no truer words were ever written than that "Competition is the life of trade."

Therefore the manufacturer does not say to his salesmen—"Call only on new prospects, or on already-established customers of the firm." He tells them to "Get the business," and if any salesman fails to do this, he naturally loses his position. Under present conditions no one can be blamed for going out after new business.

The Buyer's Viewpoint

The buyer or prospective buyer's viewpoint is entirely different. His product must be put out as economically as possible, and the finish thereon must be equal to, or even better than that of his competitors. Thus the bogy of competition is as strongly a part of his problem as it is of the manufacturer of finishes. He cannot buy from every firm who sends a representative to call on him. Perhaps if he makes his finishing department accessible to every salesman who calls, there might be very little work done in that department on certain days. If, on the other hand, he refuses to talk with finishing salesmen who call on him he is apt to be avoiding information regarding new methods or new materials, which may be of the utmost importance to him.

Mutual Dependence

Thus it follows that each needs the other and that each one is mutually dependent upon the other. Unless the actual user of finishes gives the salesman concrete information relative to their use, the salesman and his company would be more or less at sea, and unless the user of finishes is broad enough to realize that he can secure benefit and information through interviewing salesmen, he is apt to wake up some day and find himself another Rip Van Winkle.

The problem seems to sum itself up to this solution. First, no buyer should fail to give every salesman who calls on him as prompt an interview as possible. If he is not interested, he can terminate the interview in a conclusive manner without undue loss of time either to himself or to the salesman. One of the greatest losses and expenses of the selling game is the time wasted in interviewing buyers or in waiting to see them.

Next, a salesman should never make an unnecessary or general call. By that I mean that when he takes up the time of a prospective customer he should have something definite and concrete to offer. The "what do you need today" call should be eliminated.

If the salesman wants to see a buyer he should have some information to offer or something specific to sell. Furthermore, he should make his call as brief as possible. He should realize that

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The day of ordinary finishes is past. Furniture manufacturers have learned that good finishes speak the language of quality—a sales argument that quickens the pulse of the ultimate consumer. And so, many concerns have turned to . .

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. . the high-grade finishes for high-grade furniture. Nos. 96 and 97 eliminate grief in finishing rooms and contribute to bigger sales of the finished product on the markets.

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PYROXYLIN FINISHES, LACQUER ENAMELS

SUPERIORITY UNIFORMITY

the firm he is calling on is under an expense for each minute wasted, and that a long drawn-out conversation about generalities is nothing but a deterrent and a time-waster. A salesman will find, if he will practice this, that he can make many more profitable calls in a day.

Recommended Buyer's Practice

In the finishing game it is difficult to lay out any definite procedure. In many cases the buyer is not an expert finisher, and any information a salesman brings in is either lost or garbled in transmitting, or in passing it on to the finishing department. It would seem much better, after a salesman has convinced the purchasing department that he has something of interest to offer, to pass him along to the finishing department, where he can give out his information first hand. But a cry goes up immediately, "If we do this to everyone our finishing department will have no time to work."

For this reason a weeding out process should take place. Casual salesmen or those who have nothing of interest to offer should be interviewed briefly, and told they cannot interest the firm at the present time. But when a salesman has convinced the buyer that he has something worth while to offer in the way of information or materials which he believes will work better, or something which deserves further discussion, he should be permitted to see the finishing foreman, or whoever is in charge of the finishing department.

When an order is placed for any finishing material, where the salesman is not familiar with the finishing process in that shop, he should be permitted to see for himself just how it is to be used and to note everything relative to its application. This will enable him to recommend the right material and do away with the chance of sending something that is unsuitable for the work at hand.

There is no question in my mind but what the present system of selling and buying industrial finishes can be greatly improved upon, although no hard and fast rules can be laid down at this time. However, an improvement over the present methods will do much to overcome the present great economic waste.

Note by Editor: This is a subject upon which more discussion, suggestions and comments will be welcome and mutually profitable to all concerned.

There is likely to be a trail of troubles in the wake of using one company's solvent and another company's color in lacquer.

New Book on Lacquer Solvents and Plasticizers

U. S. Industrial Chemical Co., Inc., 110 East 42nd St., New York City, has just brought out an interesting book of 32 pages devoted to information on solvents and plasticizers for use in modern pyroxylin lacquers. The book is free to finish users.

"Masking" Material Booklet

A very interesting booklet on masking, dividing and striping is being distributed by The Seamless Rubber Co., New Haven, Conn. It gives valuable information for finishers who are confronted with the task of covering parts that do not take finish of the shade being sprayed. The products of the Seamless Rubber Co., including "Industric" masking tape, are fully described. Copy of the booklet may be had free.

The finishing materials

used on these magazine racks produce a beautiful finish —able to stand hard wear to which they are always subjected.

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Pecora Paint Company

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Philadelphia, Pa

Est. 1862 Inc. 1911
By Smith Bowen

Second installment of descriptive remarks and comments on the leading varieties of automotive finishes which are used in automobile production and refinishing plants.

Automotive Finishing Materials—II

By R. L. Masterson

JAPAN COLORS are paste materials composed of pure dry colors ground in japan dryers. They are used for producing the color coat on the surfacer after it has been rubbed, but before the color varnish is applied. Also, they are used for mixing with clear rubbing varnish to make color varnish and for striping.

Certain colors are so transparent that they do not give good hiding power, even when used in large quantities. For this reason it is necessary at times to approximate the shade of the finished job with more solid covering pigments; these paste materials are known as ground colors.

They are very much like japan colors, except covering power is the prime consideration, whereas with japan colors the tone of the color is of importance. Sometimes, on maroon and blue shades, it is necessary to apply a coat of ground color—to get solid covering and to produce the undertone—followed by a coat of japan color to give clearness of color and to produce the overtone.

Japan colors and ground colors are usually reduced to brushing consistency with turpentine, although of late special thinning liquids are coming into use. These usually contain some varnish and act as a sealer for the surfacing coats to help stop suction, at the same time that they serve as a thinning medium for the japan color or ground color.

Some manufacturers are putting out in a semi-liquid form, ready-prepared sealing ground colors which contain the extra varnish and which break up easier when being mixed before application.

Color and Rubbing Varnishes

Color varnishes are made by mixing japan color—which has been thinned down with turpentine—into clear rubbing varnishes, or they may be made by the paint manufacturer grinding the dry colors into the proper combination of rubbing varnishes.

For the small shop owner, who does only a few cars, perhaps the best system is to make his own color varnishes by mixing the desired shade of japan color with a good rubbing varnish, making just enough at a time to do the work before him. This enables him to give his customers a generous selection of colors, without carrying in stock a large variety of color varnishes. It also elimi-

nates the waste in connection with having a quantity of ready-prepared color varnish, left over from several jobs, which can not be used and must be thrown away eventually.

Sometimes one or more coats of clear rubbing varnish are used over the color varnish before the finish varnish is applied, where extra high-quality work is desired. In addition, it is used on natural wood wheels, steering wheels and on other wood parts.

Finishing Varnishes

All finishing varnishes should be rather long in oil content for durable results. The oils, gums and other ingredients should be of first quality, for this is the final coat which determines how long the job is going to look good. If the varnish perishes quickly or loses its luster readily, it is not well suited for the purpose.

The finishing varnish should flow freely and level out smoothly after application. It should dry free from dust as quickly as possible, to aid in securing clear work, yet it should not dry too quickly, or its durability will be affected.

The finishing varnish should always be more elastic than any coats beneath it; otherwise it will not be able to expand and contract with changes of temperature as freely as the more elastic undercoats and consequently will develop cracks and checks. It goes without saying that the finishing varnish should dry with a deep lustrous finish, free from defects.

There is now being made for automobile use, a finishing varnish which is said to contain practically no gums or resins, depending entirely upon treated vegetable oils for its qualities. While it dries a trifle more slowly than other finishing varnishes, its durability is greater than many varnishes containing resins or gums. It does not check or crack when applied over proper undercoats, and it retains its luster for a remarkably long time.

Enamels

Within the last few years some automobiles have been finished with oil enamels which replaced the color varnish and finishing varnish coats. These enamels are constructed along the same lines as other outside paints or enamels, except that instead of the liquid portion being principally linseed oil, it is usually a very durable long-oil varnish which has better drying properties and more luster than oil.

Lacquers

Lacquer enamels are rapidly taking the place of japan color, color varnish and finishing varnish on certain types of work. They are made on a nitro-cellu-

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LACQUERS
Free from gum
Give dependable finish
Established 1857
CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

lose or gun cotton base and may be recoated as frequently as every 30 minutes or every hour.

Two or more coats are used and they must be applied with a spray gun. They dry with a velvet luster but may be rubbed and polished to a high luster. Work is being done to develop lacquers for automobile work that can be applied by brushing and also to develop lacquers that dry with a high luster.

Baking Japans

Baking japans are used mostly for coating fenders and such parts. They are usually black in color and must be baked in ovens. A few cars are finished entirely with baked japans when they are manufactured, but the expense of the necessary baking equipment almost precludes the use of these materials for refinishing fenders and other removable parts.

Chassis Finishes

Today most chassis are refinished with a black air-drying glossy enamel that covers solidly in one coat and resists the mud, water and oil which is picked up from streets and roads.

Top Dressings

In refinishing tops it is customary to use a thin-bodied black material, either made on a varnish base or a lacquer base. The product used for this purpose should be waterproof and should dry free from tack. Some finishers prefer a semi-gloss luster and others a high luster on refinished tops. Both types of material can be obtained from any reliable paint or varnish house.

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WOOD LACQUER
Made Since 1857
At our works—Newark, N. J.
Pioneer Lacquer Manufacturers
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90 Worth St., New York—Works Newark, N. J.

Value of Co-operation

It is a universal fact that by co-operating, one with another, we progress. This is true not only in one or more lines of progress, but is true with all progress. So we may rest assured that with co-operation comes progress.

To get nearer the point—nearer home—we need only go into the typical wood finishing room. The furniture manufacturer wants a good finish on his product. The foreman finisher is able to give him what he wants—provided (see, there you are already) the cabinet room foreman sees to it that the surface is smooth and in perfect condition before it leaves his department. If it is not, how can the foreman finisher get the desired finish?

Money is lost and no progress is made when men in industry will not co-operate one with another. In finishing we can go a step further. The wood must be perfectly filled and wiped thoroughly, and reasonable time should be allowed for the filler to dry before the wood lacquer, varnish or shellac will do its duty properly. So you see that one step depends upon the other.—J. C. Hertstein, Jr.

New Book on Antique Furniture

"The Walnut Collector" is a new book by MacIver Percival, published by Dodd, Mead & Co., New York City. It describes early English furniture, and has many illustrations showing various pieces and designs. The book is intended to enable buyers to distinguish the genuine from the imitation antique.

The same high-grade Thresher varnish used on the interior of this luxuriant car . . . . . .

. . . is particularly suited for such high-grade furniture as this.

Use a varnish commensurate with your product—

If you are manufacturing a high-grade line of furniture (or any other product that justifies a perfect finish) investigate Thresher varnish. It is positively the best you can buy; and the fact that it is used extensively for the finest railway cars, proves this statement. They use only the BEST. Sample on request.

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Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
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Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

EDITORIAL

Will Odorless Lacquer Come?

One of the most drastic and far-reaching changes that the paint and varnish industry has ever experienced has taken place within the last few years. The effect of the development of lacquers upon this industry cannot be overestimated.

The development of lacquer was brought about by conditions which demanded such a product in the finishing industry. The principal need was for a quick-drying product which would eliminate dust and dirt adhering to the material before "setting" took place.

This has resulted in vast experimental and research work, but in spite of the detailed labor thus far put into this problem, no lacquer manufacturer can say that the peak of development has been reached. Undoubtedly the next few years will see further improvement of this material. One of the present objections to lacquer is the prevalent odor, and its supposed bearing upon the health and working conditions of the spray operators. Is it not possible that some individual or firm in the near future, will develop a lacquer without odor? Very likely this will occur in due time.

China Wood Oil

One of the most troublesome items in the worries of finishing manufacturers in the past few years has been the uncertainty of securing a proper and adequate supply of China wood oil.

Unsettled and revolutionary conditions, which have made chaos of established business in China for the past several years, have had an influence upon the paint industry. Prices of China wood oil advanced by leaps and bounds, and storage stocks have been depleted, with no prospects for a sufficient quantity to meet present demands.

All of the larger firms have had their research and chemical departments working to find an available and satisfactory substitute, but so far none has been developed which would answer every purpose served by this oil.

A few years ago one of the departments in Washington became interested in planting trees in Florida, which has a climate suitable for their growth. This has proved a success so far as growing is concerned, yet after this investigation leaves the experimental stage, there must necessarily be a number of years elapse before plantings can be made upon such a basis as will tend to relieve the dependence upon the Orient.

In the meantime, with chemists working on this problem, it is probable that something will be developed or discovered to remedy this situation and thus relieve American industry of the

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SUPER BLACK

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A nitro-cotton product also procurable in clear or colors for furniture, autos, etc., etc.

The ideal BLACK LACQUER for handles of all kinds, particularly cutlery and electrical appliances.

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burden of dependence upon foreign materials for an integral part of their manufacturing requirements.

Machines in Industry

In a most remarkable and admirable address before the American Federation of Labor in session in Los Angeles, Calif., recently, Secretary of Labor Davis touched on the importance of the machine in industry today.

"We know," he declared, "that the machine has eliminated human slavery. It has transformed the worker into a man. It has been said that but for the invention of machinery we should have a few kings, a body of lords, and their armed retainers bossing the world. It was the machine which wiped out feudalism, created democracy, and provided the average man with more luxuries than even kings enjoyed years ago."

Continuing, he said: "Never has American industry been as free from strife as it is today. Never before has American industry been so generally filled with a spirit of good-will and partnership between employer and worker. Making for uninterrupted production as this does it has played a large part in creating our present high level of employment and prosperity."

Machines are playing an important part in industrial finishing, which formerly was all hand labor. Today, we have machines for mixing, spraying, dipping, flowing, conveying, drying, baking, graining, rubbing, polishing, etc. The big demand now is for a practical striping machine.

Teach Finishing in Schools

For the past several years many employers of finishers have been bewailing the fact that the older men, who really learned practical finishing in the old days, have been dying out, and that the care and diligence which was a part of their training has vanished. Where to get well-trained men to take their places, has been a problem. Most of the oldtimers were jealous of their knowledge and were very much adverse to passing on any of their hard-earned knowledge.

The change in recent years from hand brushing to air brushing has eased this problem, but it is still true that the younger a man is when he starts to learn a trade, the better he is equipped in later years.

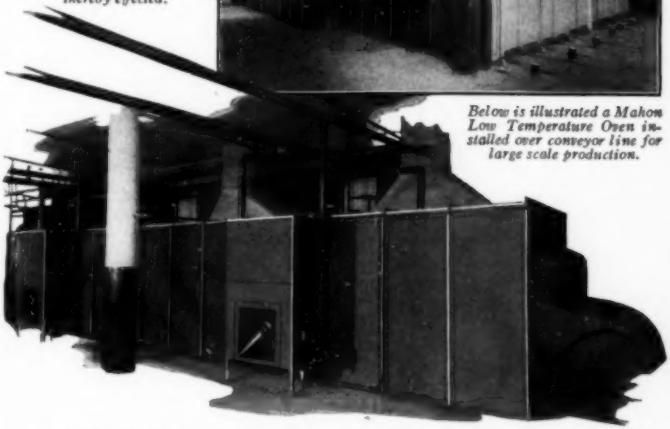
In Oakland, Calif., the board of Education recently started a class for apprentices in painting and decorating, the students receiving class instruction and actual work with both brushes and wallpaper. This school requires eight hours each week, of which four hours are given over to technical instruction and four hours to actual application.

Although this course actually applies only to house painting and decoration, why should not such classes be also started in industrial finishing. A knowledge of colors, a study of lacquers, enamels, and varnishes, together with the actual use of spraying equipment, would start the students out in life with a far greater advantage than if they had to learn from the beginning when they start to work in industrial establishments.

Proper Drying....Prime Necessity for Fine Finishing

Note the automatically operated steel doors on this gigantic oven. These doors open and close automatically when bodies enter the oven, and also when the bodies are ejected. A great conservation of heat is thereby effected.

Below is illustrated a Mahon Low Temperature Oven installed over conveyor line for large scale production.



In the plants of the representative auto body manufacturers of the country you will find Mahon Industrial Drying Ovens in use. The approval of the leaders in the field has been gained by Mahon through an understanding of their requirements and a close cooperation with plant layout men. In Mahon Ovens the insulation is fully protected with metal covering, allowing flushing with water when desired. Standard sectional construction of the low temperature ovens permits dismantling and moving without loss or damage. Wherever you find a Mahon installation you find the most up-to-date drying facilities, and efficiency and economy of that high order necessary today in the closely competitive field of modern industry. Get facts from Mahon.

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MAHON

INDUSTRIAL DRYING OVENS

Summarizing certain significant facts revealed through dealers' and users' experience with brushing lacquers, and suggesting what might be done to guarantee greater success with this new material

What I Learned About Brushing Lacquer

By J. C. Hertstein, Jr.

QUITE some time has elapsed now since modern brushing lacquers were first marketed. It is therefore interesting to take note and see to what extent these materials have been used and to what success.

Some manufacturers claim that their brushing lacquer sales have been very good and that they have encountered little difficulty in getting repeat business. This, of course, is very encouraging to all who are interested in brushing lacquers.

On the other hand there are certain manufacturers who are not so keen about expressing their viewpoints about these new materials, because they have not felt entirely satisfied with their volume of sales. Therefore the reports would seem to be of a conflicting nature. This situation will bear some explanation.

After making a rather careful investigation as to the entire industry — the manufacture, sales and actual use of brushing lacquers—I have found this to be true: that the manufacturers who are putting out the most practical brushing lacquer, that is the material that will brush out the easiest, or flow well, and at the same time those that are advertising their goods extensively to acquaint the public with this material, are the concerns that are enjoying a satisfactory business.

However, even those concerns who seem to have a practical brushing lacquer — looking at it from the standpoint of the consumer—are not 100 percent satisfied with the sales obtained nor with the reports received from dealers.

Facing Facts

Actual facts must be faced. Simply because some manufacturer or salesman may be overconfident and almost jubilant over his product, means little or nothing. Any material will stand or fall when put to the actual test and, while a salesman can probably sell the first order of a certain product, unless the material proves to be satisfactory he can sell no more to the same customer.

In one state I visited I found,

The Men Who Know COST!

Buy

"FLINT" Lacquer Enamels

Flint Lacquer Enamels in a new and complete range of brilliant hues. Lacquers of high lustre that retain their brilliancy, offering a wide choice of unusual colors. Users of colored lacquers can prove for themselves the many advantages to be had through the use of Mayer & Loewenstein's colored lacquers. They raise quality standards. Cost less because they cover better and last longer.

Write for working samples and our new color card.

Flint Lacquer Enamels are manufactured under the same quality standards that have gained and maintained our leadership in the Lacquer and Varnish market. In addition to their unusual color appeal, Mayer & Loewenstein's Flint Lacquer Enamels offer the same quality finish that has signalized our products throughout the field of fine wood finishings.

MAYER & LOEWENSTEIN

Long Island City, New York

in small country towns, a number of dealers whom salesmen had stocked up with brushing lacquer and, in nearly every case, this lacquer remained on the shelf instead of being sold.

This, in itself, does not even imply that the goods were not correct, because many good products, that are not pushed by the wideawake dealer, will remain on the shelf indefinitely. But there were several reasons for this lacquer remaining on the shelf. Some of the customers who tried out the brushing lacquer were not satisfied with the results, and went back to oil enamel or paint. Naturally they did not advertise the goods to the benefit of the dealer, consequently the dealer sold little brushing lacquer.

A still greater reason why this brushing lacquer did not move from the dealer's shelf lies in the fact that the dealers themselves were not sold on the product. Here is the real reason for the lack of sales in nearly every retail store I encountered:

Water White Lacquers No. 82

For Gold
For Silver
For Brass

Always Dependable

Established 1857

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RAUX ESTER GUM RESINS

Rosin Ester Gum—Congo Ester Gum—Manila Ester Gum—Gums cut, fused, or treated to meet individual requirements.

ROBERT RAUH, Inc.

480-490 Frelinghuysen Ave. Newark, N. J.

Over-rating the Product

Evidently the salesmen had told the dealers wonderful stories about what could be accomplished with brushing lacquer, and had portrayed to them a picture of the one product that was universal. But many dealers have brains; they put the goods to the test and found that while the brushing lacquer could be used and would give the user a satisfactory job, if properly applied under certain conditions, it did not measure up to all the salesman's claims.

Ten years of experience on the road selling paints, varnishes, lacquers, etc., has convinced me that it never pays to make claims unless you can back up everything you claim. If these enthusiastic salesmen had cautioned the dealers about brushing lacquer's shortcomings, as well as praising its merits, none of the dealers would have been disappointed. They would have known how, when and where to use brushing lacquer, and could have instructed their customers accordingly.

It is safe to say that the dealers in the state referred to, will not buy a second quantity of brushing lacquer unless the first lot is satisfactory and meets the requirements and claims of the manufacturer.

There are many lacquer manufacturers who realize that brushing lacquer has its shortcomings; they tell their trade about it and promise to do all within their power to correct these faults as soon as they can discover ways to do so. Their dealers, in turn, can tell the trade what to look out for when applying same, and possibly go so far as to coach the trade in the use of brushing lacquer.

NIKOLAS LACQUERS

SINCE 1890 we have made only superior quality lacquers, because inferior quality is alway disappointing, no matter how cheap it may be.

No great success was ever made with an inferior product. That is one reason we don't make it.

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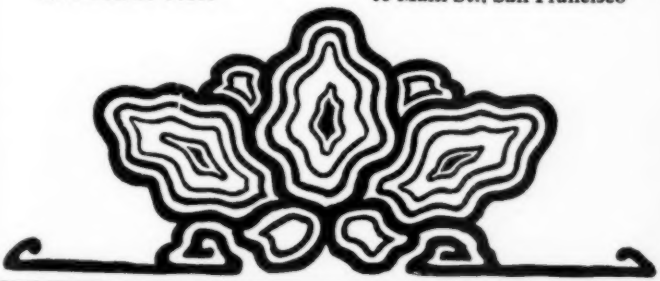


Slow Them Down

According to actual stories related by the dealer trade and by small industrial shops which use a brushing lacquer because they have no spraying system, the apparent trouble with most brushing lacquers is not that they have insufficient body, not that they do not cover well, not that they will not go on over old paint, etc., but that they still dry too rapidly. If brushing lacquers are to meet with entire approval they will have to be "slowed down" considerably in drying.

The fact that many manufacturers carry the advertising slogan, "Dries in twenty minutes," is not so much of a good advertisement as some might think. If the manufacturer could slow up the lacquer, so he could advertise, "Dries in forty minutes," the trade would probably get far better results with that brushing lacquer. This recommendation is made on the basis of actual reports from dealers and users, and they are the prime factors to be considered.

New Spray Gun

The DeVilbiss Co., Toledo, Ohio, has brought out a new spray gun in which a number of interesting features are incorporated. The gun, as illustrated herewith, has a spray head with graduated adjustment controlling both the character and width of the fan spray. This makes possible a quick return to a previous setting for producing any desired spray. The air can also be cut off to produce a round spray. Nozzle parts are all self-centered to preserve absolute alignment.

The construction of this gun is said to be such that, with low air pressure ranging from 40 to 60 lbs., the material is finely, softly and evenly atomized, thereby giving a smooth, uniform coating. Only three parts—the bore of spray head, fluid tip and needle—come in contact with fluid. The parts requiring cleaning are all confined to the "quick-detachable" spray head.

The gun is light and easy to handle.

The gun rests easily in the hand due to its design and balance; a free trigger action makes it easy to operate.

To save rubbing and polishing work at the termination of spraying the lacquer, it is necessary to refine the supporting coats of material.

New Addition to Spruance Plant

A two-story and semi-basement addition to its main plant has recently been built by The Gilbert Spruance Co. of Philadelphia. The first floor of the new building will be used for offices, while the second floor is for laboratory work where every modern facility is provided for research and development activities, including the testing of raw materials and finished products. Three rooms are devoted to working out new finishes and effects for furniture, and every means is afforded for aiding the trade generally in the solution of finishing problems. The portion of the old building, formerly occupied by offices and laboratory, will serve to enlarge the space devoted to manufacturing and shipping.

SMOOTH FLAT FINISH

It looks and feels like rubbed work

Produced by using Kentalac as the undercoat and Red S. Flat Varnish as the final coat.

Made in three effects

Oil Rubbed Finish
Dull Rubbed Effect
Dead Flat

The Schaefer Company

1315 West Kentucky Street
LOUISVILLE, KENTUCKY

Manufacturers of
VARNISHES *and* LACQUERS

Restorative treatment after unpacking, handling and long usage.

Cleaning and Polishing Piano and Furniture Finishes

What methods, materials and precautions to use in cleaning and polishing varnish—finished and lacquer—finished pianos and furniture to restore the clear luster and untarnished appearance

By Chas. Blanford

IT IS almost a universal practice for the piano or furniture dealer to clean up the surface of pianos or furniture after uncrating and before placing on the display floor, to remove any traces of oil left from the rubbing operation in the factory and any slight packing marks.

All clear finished goods, whether varnished or lacquered, take on a certain amount of bloom or dull haze from the air. Finger marks and other unsightly surface marks are also likely to be present from handling. All of these surface defects should be removed before displaying the finished article, or before delivering it to the home of the customer.

Varnish Finishes

The usual method of cleaning up varnished work is to go over the surface with a soft cloth on which a little rubbing oil or paraffin oil has been poured. It is recommended that the oil be reduced, three parts of naphtha to one of oil, so as to reduce the oil body as much as possible. It is also wise to use a cloth previously dampened in clear water and wrung out, as a medium for spreading the oil. Wipe off the oil surface with cheesecloth over which denatured alcohol has been poured.

Before using the alcohol cloth, wring it out and then wave the cloth in the air until it feels cool to the hand. When this is done there is little or no danger of "burning" the surface, but if not done, "burning" is almost sure to result from the action of the alcohol upon the surface. This procedure is known as "oiling off."

In some cases, prepared cleaning and polishing solutions are used to replace the above procedure. These solutions usually contain a proportion of alcohol, vinegar, acetic acid, or other oil absorbing substances. When properly compounded, some of these cleaning or polishing liquids

You know us well

—but do you really?

You know us as an old established house, recognized by users of finishes as makers of fine products.

When you have a job calling for fine varnish, enamel or lacquer, you think of Murphy.

We are glad to have you think of us in this way; but we also want you to know us for something else that we are—progressive and forwarding-looking and interested in our customers and their work.

We have a practical laboratory—and a most unusual one. The men at the head of it are always in close touch with the new trends and changes in finishes, whether it be in varnish, enamel, Japan or lacquer, and whether the dry is normal by air, or forced by baking. They are also very much in touch with manufacturers and their needs—to see how they can help our customers.

We also have several experienced finishers who spend all their time working with these products, to be sure that they are entirely practical in actual work.

We are very proud of our record of 63 years. But we are also very much aware of the fact that today is today. And we are here today to help you solve your problems whatever they are. Sometimes to cut operations and give you a finer finish at less cost for labor, sometimes to speed production by quicker drying with no sacrifice of fine results, or to make your product more saleable by providing a superlatively fine finish. Whatever it is—*your problem is our business.*

Can we be of service to you in some of the things you are doing or contemplating right now?

MURPHY VARNISH CO.

NEWARK CHICAGO
SAN FRANCISCO MONTREAL

MURPHY FINE FINISHES

Famous for 63 years among architects, master painters and makers of products requiring a fine finish.

Air-drying and Baking Varnishes

Enamels, Lacquers and Stains for Brushing and Spraying and Dipping.

are very good; others are harmful to the varnish.

Lacquer Finishes

Always use washed cheesecloth for cleaning lacquer finishes. Clear lacquer finishes can be cleaned up by the oiling off process outlined above for varnished surfaces but, because of the greater resistance of lacquer, it is possible to use other methods which give more satisfactory results. We recommend the following method, for example, has proved to be satisfactory:

Instead of an oil base solution for cleaning, use a weak solution of vinegar made by adding a pint of vinegar to two gallons of water. In using this vinegar solution or any other cleaning compound, it is important to prevent it from drying on the surface, although it is possible to work substantial areas, as for example, a front panel, or side of a piano.

After going over the surface with the vinegar-water solution, take a piece of washed cheesecloth, dampened with clear water, and wipe off the surface. Then finish up with a damp chamois. This will leave a clean, transparent surface and bring up the original luster (whether dull or polished) in fine shape.

Oils and alcohols tend to polish, and it is primarily for this reason that the vinegar clean-up method is strongly recommended.

Another method—though ordinarily limited to polished work—is to go over the surface with a mixture of soapsuds made from a neutral soap like castile or Ivory, which dissolves any traces of oil or grease. If this solution is used, great care must be taken to prevent it from drying on the surface. It should be washed off thoroughly with clean water and then wiped dry with a clean, moist chamois.

This method is particularly suitable in the home for removing the heavy gray haze which shows up sooner or later on the luster finishes. I am inclined to believe that a vinegar solution is to be preferred for all ordinary cleaning purposes. Surfaces finished with flat lacquers should never be cleaned up by oiling off with oil and following with alcohol. Always use the vinegar-water combination.

Removing Packing Marks

Small chafed or rubbed spots, caused by the packing coming in contact with the finish during shipment, can often be removed by wiping over the spot with a cloth wet in alcohol. If the marred spot is too deep to respond to this treatment, it may be advisable to rub the spot lightly with fine pumice stone and oil to smooth it up; then polish with a little rottenstone to bring up the luster. The rubbed spot can then be cleaned up by wiping lightly with a cloth barely moist with alcohol.

Where deep scratches or other serious defects are in the finish it may be necessary to repair these by burning-in with stick shellac, or by filling-up with brushing lacquer.

Old or Defective Finishes

Old finishes frequently show checks or cracks. Never use oil in cleaning off such surfaces because it will always sweat out in time, and even though the checks may be small, their importance will be greatly exag-

"Wears like Flint"

A ROMAN general once said he wished every man in the enemy army could be combined into one head so that, with a single slash of his sword, he could annihilate the whole horde.

Scores of manufacturers, by coming to us, have disposed of all the elements opposing a high quality, economical finish, as easily as the old general wished he might rid himself of the enemies of his empire.

For almost a half century, The Cleveland Varnish Company has been gathering under its own roof, the myriad army of finishing problems that beset the manufacturer and finding for him their economical solution in its laboratories.

We Specialize In:

Pharaoh Lacquers—Colored, Clear and Rubbed Effect:—Flat, Velvet, Semi-Bright.

Paragon Rubbed Effect Varnishes—Flat, Velvet, Semi-Bright.

Our rubbed effect lacquers and varnishes give an almost perfect reproduction of surfaces *actually* rubbed, and have nothing in common with lacquers or varnishes that produce only a poor imitation which is at best a makeshift.

Your Problems are Our Business

THE CLEVELAND VARNISH COMPANY

Established 1881

3111 EAST 87th STREET CLEVELAND, OHIO, U. S. A.

gerated by this process. The proper thing to do in cases such as this is use the vinegar-water combination.

Welcome the Salesman and Learn What's New

Only a few years back the average foreman finisher did considerable experimenting to develop new methods. Today the intelligent foreman finisher obtains most of his knowledge through reading and listening; he does as little experimenting as possible. "Read, listen and learn," seems to be the motto in the finishing game today. This must be done to keep pace with the rapid strides being made in the finishing industries.

How many foreman finishers today realize that the good industrial finishing salesman is somewhat of a traveling information bureau? How many foreman finishers care to give him the time and attention he deserves? I've seen cases where the industrial salesman could not get an interview with the foreman finisher to discuss finishes and methods of finishing. In a good many cases the salesman only gets as far as the purchasing agent, who knows little or nothing of the finishing problems that confront foreman finishers. No purchasing agent is in a position to discuss finishing materials and methods of finishing intelligently.

Of course, the industrial salesman may not be able to tell you exactly how or what methods are adapted for your particular class of work, but in his travels he has seen new ideas and methods worked out successfully on both large and small scales, in the different plants he has visited. All this information the industrial salesman passes on to you freely in the course of various discussions.

Many a suggestion obtained this way sets the foreman finisher thinking, and when he puts it into practice, it may save his firm thousands of dollars annually. It is a known fact that experimenting with new methods is costly. Learn from others if possible and you save both time and money. Open the finishing department to the salesman and give him a little of your time when he calls; he will be glad to discuss finishing problems with you. Remember the industrial finishing salesman's time is just as valuable as yours.

Facts are facts. Discussion exercises the mind, while argument only exercises the tongue. Discuss freely.—C. S.

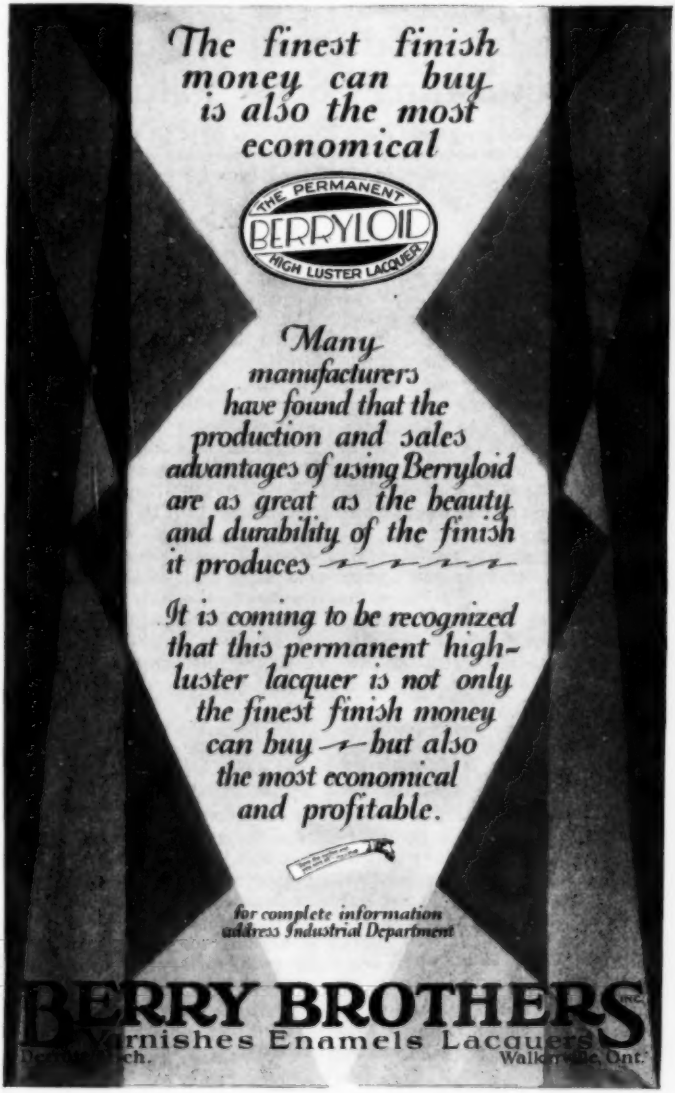
Changes in Kellogg Personnel

Mr. J. D. Boucher, vice president of the Kellogg Mfg. Co., Rochester, N. Y., announces the appointment of Mr. Louis Scheuerle as sales manager; Mr. H. F. Jones as district manager for New England with headquarters in Boston; Mr. Charles A. Cole as district manager of the Southeast territory with headquarters at Atlanta, and Mr. C. A. Clark as district manager of Metropolitan New York with headquarters at New York City.

Finishing Studio—Finishing Service

The Jones-Dabney Co. of Louisville, Ky., has established at 540 Monroe St., Grand Rapids, Mich., a branch office, studio and warerooms where a staff of experienced decorators, finishers and finishing designers is maintained for the benefit of furniture manufacturers.

A 16-page booklet, describing and illustrating this studio service, is being distributed to the trade.


The finest finish money can buy is also the most economical
THE PERMANENT
BERRYLOID
HIGH LUSTER LACQUER
Many manufacturers have found that the production and sales advantages of using Berryloid are as great as the beauty and durability of the finish it produces
It is coming to be recognized that this permanent high-luster lacquer is not only the finest finish money can buy—but also the most economical and profitable.
for complete information address Industrial Department
BERRY BROTHERS INC.
Varnishes Enamels Lacquers
Walkerville, Ont.

Quality Product Plus Quality Finishing—Sales Value

How new products are judged by their finish and what happened when one concern upgraded a bit of hardware by making it better and finishing it better

By Donald A. Hampson

AN OLD SAYING that "it is the paint that sells the buggy," has a modern counterpart in the expression of the thought that "the finish is what counts." Psychologists put it in a more academic way — "we are finish conscious"—which the advertising boys are beginning to play up for all that it is worth.

Finish is, however, something more than a bait. No matter how fine a piano is, no one would want it in his home if it had been finished by applying a few coats of gaudy paint. No! the finish must be intrinsically good to appeal to the eye during the months following the sale, and it must be a finish that harmonizes with the surroundings in which the article is to be placed.

A fact that the buyer probably does not realize, is the relation of finish to underlying quality. Almost without exception, the superior finish is to be found upon a superior article. As a manufacturing truism, the choice products are selected for the better finish, just as the choice apples are put into the fancy packed boxes.

Bright Versus Black

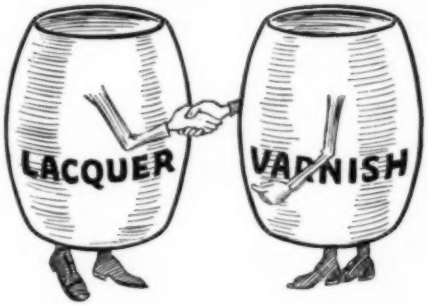
A good example of selecting the best for the best finish is to be found in "Chordal's Letters", that classic of manufacturing which was published nearly 40 years ago. Human nature was the same then as now. The builder of steam engines, it is recounted there, sold them as "bright" and "black". The bright engines were sold at a higher price than the black.

Into the bright engines went the best castings, the smoothest turnings, the most beautifully grained wood for the jacket. Why? Because these parts would show off all the beauty of the natural material when polished and smoothed. Into the black engines went the parts which showed minor defects, when the surface had been smoothed off; these defects were skillfully covered up by coats of black paint. The buyer of a bright engine got quality with the glistening surfaces; the buyer of a black engine took a chance, that's all.

People are willing to pay more for a good finish, too. It is one of the facts concerned with our higher standards of living that price seldom retards the sale of a superior article. There are more first-grade radio cabinets sold in proportion to the whole than there used to be, just as there are more high-class motor cars sold.

Recently a manufacturer of printing and publishing supplies decided to bring out a superior wrench for everyday use around the print shop. Heretofore these wrenches had all been of composite make-up—a steel jaw set in a cast iron handle. This wrench

Lacquer vs. Varnish



We Make Both

WHO SAID THERE WAS ANY ENMITY BETWEEN THESE TWO?

While we are primarily varnish manufacturers, making a complete line of varnishes for all purposes, we also believe that there is a place for lacquer, as well as varnish—each has its respective place and merits. . . . To use either out of its place means **false economy**—and dissatisfaction is the ultimate result. For this reason we are making both lacquer and varnish thus offering our customers the opportunity of using the one best suited for their products.

Our CRYSTAL RUBBING and DURABLE COACH

varnishes are unsurpassed for producing dull rubbed effect, high-polished finish or natural high gloss.

Our FLAT and BODY LACQUERS

are unexcelled for producing dull rubbed effect or high lustre surfaces—and at low cost.

If you want a lacquer or varnish that offers you the most for the money (real economy) better try ours. We have been making finishing materials since 1870. Working sample on request —what shall we send you?

Indianapolis Varnish Co.

131-147 NORTH PINE ST.

Indianapolis, Indiana.

did the work but it was rough and black and nobody ever took any care to keep it clean. One manufacturer had tried baking a coat of enamel on the tools, in an effort to make them more comfortable to handle and "easier to look at". But the trade did not appreciate the difference; it was still a black wrench and it was priced higher than the old one they knew.

Upgrading the Product

The last manufacturer who tried to upgrade the product went at it more extensively. He spent money for dies and tools, and he made a wrench from one solid piece of drop forging. It was a splendid tool without any added surface coating, but would it sell any better than the old ones? This man knew of the black enamel failure and he had no desire to repeat. What he did was to polish the entire outer surface, then apply a heavy coat of copper and finally a nickel plate. The finished wrench showed up like a piece of sterling silver—and it was as good in quality as in finish.

What Happened

The acid test came with its presentation to the trade. The company decided to retail the wrench at $1.75, which was double the standard price for the conventional black article. Through some misunderstanding, the first salesman who took the new wrenches out, asked $2.50 apiece for them. In consternation, the office wrote to the salesman that he had quoted the wrong price; but he wrote back that customers liked the looks of the new tool, they liked the velvety "feel" of its surface, they liked its "balance" and the longer they looked at it the more convinced they became that the article was of unusually high quality from every standpoint. It went over! The price remained $2.50, and the tool is becoming the standard in the trade. The bright finish scored.

No one need hesitate to spend good money for consistent finishes. High grade goods will take the best of finishes, and deserve them; inferior products may take the same finish, but ultimately it is a waste of money to apply them because the true utilitarian nature of the articles will soon be discovered, and no amount of fine finish will prevent the backwash of complaints which, eventually, will result in decreased sales.

The danger of fire originating at the spray booth can be materially lessened if the booths, tubes, stacks and all surfaces are cleaned often.

Color Merchandising

Mr. G. A. LaVallee, vice president of the Marietta Paint & Color Co., will address several retail lumbermen's conventions during January, to be held in Milwaukee, Grand Rapids, Cincinnati and Boston. He will also speak before the Nylta Club of New York on January 27th, on "Color Merchandising."

A. S. M. E. Annual Meeting

Pamphlet No. 717, dated Nov. 21, 1927, fully describes the annual meeting of the American Society of Mechanical Engineers which was held on December 5th to 9th. Several interesting subjects were discussed and copies of the various addresses may be obtained from Mr. C. E. Davies, 29 West 39th St., New York.

New Year Prospects

"Taken in a broad sense we enter the New Year with the forces of stability dominant in the business world," concludes the remarks of Herbert Hoover, Secretary of Commerce, in his recent answer to the usual annual request of the press for a statement of prospects as to the future. Mr. Hoover's remarks, in pamphlet form, may be obtained by addressing the Department of Commerce, Washington, D. C.

Bell Telephone Laboratories, New York, N. Y.

Baked Japan Finishes—Successes and Failures

An account of how baked japan finishes were subjected to a series of tests to determine what baking time and what temperatures are most satisfactory; also how cleanliness of metal, before finishing, affects the work

By E. M. Honan and R. E. Waterman

THE life of baked japan finishes is uncertain, especially in some kinds of service. An analysis of the uses to which articles so finished are submitted in the telephone system showed such service to involve two distinct types.

In one type, injury to the finish results primarily from chipping or scratching; in the other type destruction of the finish is due primarily to contact with hands, which subject the japan not only to mild abrasion but also to the action of perspiration. In either type of service the finish may remain good for years or fail in a few months, but rapid failure occurs much more frequently in the second type of service. Some of these variations depend not only on the severity of the service but in part on the quality of the finish itself. Obviously it is highly desirable to have laboratory tests by which the life of japan finishes may be predicted.

Several methods were devised to test the wearing qualities of japan finishes. These included two general types of test corresponding roughly to the two types of service—attack by mechanical means and by action of liquid reagents. Combinations of these two types were also tried.

The mechanical tests included rubbing, scratching, bending, and determination of physical constants of the films. Tests of this type seemed to be of possible utility where abrasion and chipping are important factors in the service. Much work was done on these various tests, but all were found to possess inherent defects.

The liquid type of test may consist simply in immersing in a suitable solvent a piece of metal on which the japan has been baked and noting the length of time necessary to produce definite action on the japanned surface. A favorable feature of this type of test is the elimination of the personal and mechanical variations.

The most desirable solution having once been determined, the conditions of test can be so defined that the individual has no opportunity to interpret the results in an arbitrary manner. This sort of test may be used reliably to determine the degree of baking which a sample has undergone. The degree of baking in turn determines largely resistance either to mechanical injury or to attack by liquid contaminating agents such as perspiration.

Although there are other methods of determining the degree of baking, these are usually qualita-

tive and depend upon the color, resistance to scratching, or softness of the finish. In the hand-contact type of service certain liquid immersion tests may be used as a direct measure of serviceability. This was attractive to the writers because in certain pieces of apparatus with which they were concerned, it had become apparent that the finish failed most rapidly where it came in contact with the hands.

Method of Test

Since the writers were interested primarily in the life of japan finishes on brass, this metal was used in the form of 20-gage sheet specimens 1 × 2 in. in area. However, it has since been found feasible to apply the test to a variety of telephone parts during the course of manufacture as an inspection procedure.

One part of phenol and 4 parts of distilled water are shaken together thoroughly at room temperature and allowed to stand. These proportions produce a stock solution which contains the two layers mentioned.* A portion of the upper layer is siphoned off and allowed to stand for a few minutes before the tests are made. Under ordinary conditions evaporation of water from the test portion will soon cause the formation of a few drops of the second phase. The specimens are immersed in the test solution and examined visually at intervals of a few minutes at first, the intervals being increased in the later stages. The temperature is maintained at approximately 72-deg. F., since it was found that a higher temperature increased the rate of destruction of the film. A sample is considered as having failed as soon as the japan on half or more of the immersed area has become wrinkled or has sloughed off. The times of failure given in the subsequent data are based on this standard. Often the film on some small areas, especially along sharp edges or along ridges or furrows, loosens more quickly than the film on the main area. Such localized failure should be ignored unless there are special reasons to the contrary.

If this test is to be reliable solely as a criterion of the degree of baking, it is of prime importance that the metal shall be absolutely clean when the first coat of japan is applied. No doubt various methods of cleaning may be used satisfactorily, but they must be carried out with great care as to uniformity.

The writers' experience leads them to feel that the factory method of cleaning metal which is to be japanned must be chosen with very great care. Visual examination of the surface is entirely futile as a means of control. For example, it was found that a mineral acid dipping of brass is poorly adapted to the production of adherent japan finish, whereas dipping in glacial acetic acid is effective, though both appeared equally clean.

All oxide should be removed without leaving any trace of re-

*The 8½ percent phenol solution is a desirable testing solution because its composition is quite constant at ordinary room temperatures and is not changed by the evaporation of the water. This material was adopted after experimenting with several other chemicals and chemical combinations, including alcohol, acetone, glycerol, benzene, aniline, etc.

As is well known, a mixture of water and phenol separates on standing into two layers, the upper one of which is a solution of phenol in water and the lower one a solution of water in phenol. The upper layer contains about 8½ percent phenol and the lower layer contains about 70 per cent phenol.

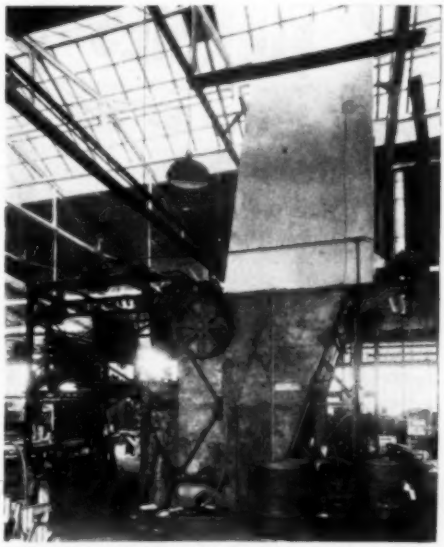
sidual salts. Mechanical means such as sand-blasting may be used advantageously. Accuracy and consistency of results with the test solution are possible only when the time between sand-blasting and spraying is kept at a minimum.

A lapse of a day, even when the test pieces were kept in a desiccator, had a very noticeable effect on the results, and if the metal was allowed to stand in the laboratory for a few days before japanning the resistance of the film to the phenol solution was inordinately short. In all work discussed here the metal was sand-blasted immediately prior to spraying on the japan.

Consistent results may be obtained on metals other than brass, but the time of resistance to phenol solution fixed as a standard for the behavior of a japan finish must be properly related to the metal on which the finish is applied.

With the same baking conditions the various common metals arrange themselves in the following order of decreasing resistance to the phenol solution: copper, iron, brass, aluminum, parkerized iron, and zinc. In the case of alloys, such as brass, the percentage composition doubtless has some effect. Heat treatment and cold-working of brasses also distictly affect the adherence of the japan during the phenol test.

The thickness of the japan coating should also be standardized, although this factor is of minor importance compared with the kind and cleanliness of the metal. Under given conditions, thick coats do not bake so thoroughly as thin coats.



A new electrically-heated bake-finish oven with continuous conveyor and automatic-dip equipment. Automatic control apparatus assures the maintenance of a constant, correct temperature.

Typical Results

The experimental results (Table I) show the correlation between baking time and temperature with time of resistance to phenol solutions. Two coats of japan were sprayed on freshly sand-blasted brass of the following composition: copper 64.05 percent, zinc 33.53 percent, lead 2.40 percent, each coat

being baked as indicated.

The japan used was a high-grade commercial japan with a drying-oil varnish gum base. Other products all of the same type, however, gave equally consistent correlation of degree of baking with time of resistance to phenol. The length of resistance to the phenol solution under any given set of baking conditions naturally varies with different makes of japans.

It will be noted from Table I that samples baked at a low temperature, or for a short time, are less resistant to the phenol solution than those subjected to a more severe baking. These results are only illustrative. Similar results in other tests, including films of this and other japans baked on other metals, as well as on brass which was cleaned by various methods, are in harmony with these data as to relation of the time of resistance to phenol with the degree of baking.

FINISHES
ENAMELS LACQUERS
VARNISHES
Are made in a modern plant devoted
to making Industrial Finishes only.
Our crackle and crystallizing baking lacquers cover several well-known metal products in the office appliance industry. Let us tell you about them.
THE KAYDESS CO.
DAYTON, OHIO

Table I—Time of Resistance to Phenol Solution.

Freshly sand-blasted brass plates with two coats of japan.
Average total thickness of two coats, 0.0015 inch.

Baking temperature Degrees F	Baking time Hours	Time resistance to phenol Minutes
338	1	15
338	2	22
338	4	110
338	8	290
356	1	43
356	2	200
356	4	600
374	½	30
374	1	125
374	1½	540
374	2	600
392	½	45
392	1	280
392	1½	540
392	2	540
410	½	150
410	1	360
410	1½	540
410	2	540
428	½	330
428	1	510
428	1½	540
428	2	540

In order to get data on the relation between the baking of japans and their behavior in a service where contact with the hands predominates as a destructive agency, japans were applied on knobs of clocks used for recording attendance of employees of the laboratories. These knobs are handled by a definite number of individuals four times a day and the amount of handling which is necessary to produce a failure in the finish can be measured accurately. The composition of the knobs used was as follows: copper 61.70 percent, zinc 35.87 percent, lead 2.39 percent.

The freshly sand-blasted knobs were given two coats of japan. Each of the successive coats on an individual knob was baked for the same length of time and at the same temperature. One-fourth of the knobs were baked at 170° C for 60 minutes, one-fourth at 170° C. for 105 minutes, one-fourth at 195° C. for 60 minutes, and the remainder at 195° C. for 105 minutes. Two knobs from each set were tested in the phenol solution. Table II shows the time of resistance to the test solution.

Table II—Resistance to Phenol Solution of Japan Finish on Brass Knobs.

Knob No.	Temperature of bake Deg.. F.	Time of bake Min.	Time in phenol Min.
157	338	60	35
158	338	60	40
169	338	105	65
170	338	105	65
133	383	60	115
134	383	60	120
145	383	105	300
146	383	105	330

The remainder of the knobs were placed on time clocks in regular service. At the end of 7 months the knobs were removed from the clocks. The results showed that underbaking was the chief cause of unsatisfactory wear in this case. With careful control of baking conditions this japan will withstand over 15 months of service on these clocks, while failure occurs in a month or two in some samples baked according to methods heretofore regarded as commercially acceptable.

Other Possible Uses of Test

This test was designed primarily to detect a condition of baked japan finish leading to short life when the part is handled. This condition was found to be associated with under-baking, which the phenol test detects satisfactorily. There also seem to be other uses to which this test might be put.

The uniformity of results obtained under carefully controlled conditions makes it possible to set a baking standard which each lot of liquid japan purchased should be required to meet. In the same manner an unknown japan may

be tested to see if it will conform to established baking conditions.

As has been stated above, the surface prior to japanning must be absolutely clean in order to get consistent results in the phenol test. Conversely, the test can be used to detect improperly prepared surfaces, other factors being controlled.

Defective surface, which seems to be more often related to an oxide film than to dirt or grease, sometimes has a deleterious effect on the wearing qualities of the film, although the writers' evidence is not complete enough to make a general statement.

Another peculiar action and possible use of the test was found when some brass which had been heavily worked without subsequent annealing was found to act queerly on being japanned. The resistance to phenol solution was low yet there was an unusual amount of dullness which is usually associated with over-baking in the finished product. After such pieces were annealed they acted normally.

It is often desirable to japan a new type of surface which is not known to be adapted for the application of japan. The phenol test could probably be used in this connection. For example, zinc is notoriously a poor material to japan and a japan film baked on zinc has very little resistance to the phenol solution.

Brass given a black nickel finish and subsequently japanned was found to wear very poorly. When such product is subjected to the phenol test the film sloughs off in an amazingly short time compared with copper, iron, or brass.

The phenol test seems to give a rather accurate indication of the degree of cementation between the japan film and the underlying metal, and thus becomes a tool for studying the baking of japan which it is hoped will be of value to other workers.—*Industrial and Engineering Chemistry.*

Future Trends in Design

If an accurate observation of today's market provided us with the knowledge upon which we might design our product to be offered for sale tomorrow, all the dangers of carrying speculative inventories would vanish. Unhappily this is not possible.

There must always be a certain lapse of time between the moment of observation of the present market and the moment when the products designed as a result of that observation can be offered for sale.

It is therefore insufficient to observe correctly what the market is taking; it is necessary to be able to make accurate deductions as to what the market is going to take by the time new products are manufactured. It is of vital importance, in other words, to foresee trends.

Carborundum Co. Literature

A very interesting monthly publication describing the products of The Carborundum Co., Niagara Falls, N. Y., is issued for free distribution under the title of "At the Sign of the Indian Head." Much valuable information is given on the use of abrasive materials for properly preparing surfaces to be finished.

Sandblasting Equipment Circular

In the refinishing of automobiles, removal of old finishes has progressed materially through the use of sandblasting equipment. Interesting descriptive literature in this connection has been issued by George M. Stowe, Jr., 67 Forrest Ave., Buffalo, N. Y., covering the "Multiblaster" for sandblasting. It is claimed that this equipment removes rust and thoroughly prepares the bare metal for the priming coat. The literature is free.

Spray Hose Couplings

A COMPLETE SERVICE

Any size of hose and any size of connection for any make of spray equipment.

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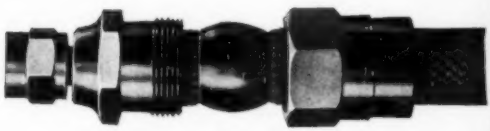

The EASTMAN Way

Benzol By the Finishing Industry

Considerable thought and study have been given lately to the real or apparent dangers to health incurred by the use of benzol in the finishing industry. A report recently made public by the New York State Bureau of Women in Industry, headed "Chronic Benzol Poisoning Among Women Industrial Workers," states that poisoning affects one out of every three women workers exposed to benzol fumes. It is stated that its tendency to hemorrhage among women and girls make it especially dangerous.

Some other states are also studying this problem. California has a proposed law prohibiting its use as a thinner for lacquer or other finishing materials. Other states are amending their workmen's compensation acts to cover cases of such poisoning, whether from direct or indirect exposure.

It is a well-known fact that a number of concerns are at present using benzol when other and adequate substitutes could be procured and used satisfactorily. Since the era of lacquers, fume protection through the use of respirators is much more common, but even this precaution is not wholly effective against the insidious fumes of benzol. It is probable that in the case of benzol, as is true of some other industrial poisons, the respiratory organs are not the only avenues through which the poisons enter the human system. There is undoubtedly some absorption through the skin, as well as from fingers and hands passed to or near the mouth and nostrils.

Since there are undoubtedly some cases where it is necessary at present to use benzol, prohibitive legislation might work a hardship on certain industries. However, where this is the case, extensive precautions should be taken to safeguard the health of the workers. Frequent medical examinations should be given; proper ventilation of working rooms should be always provided. Benzol should never be used as freely, openly and carelessly as other thinners, for only by such precautions can its dangers be minimized.

Matching Special Colors

In giving out samples of materials to be matched, it is always better to take the material from bulk, in the form in which it comes from the manufacturer, than to submit a sample in the shape in which it is used. Full information, however, should be given as to the amount and kind of reducer used.—C. D. Youngs.

Color Combinations

Red and black produce.....brown
Lake and white.....rose
White and brown.....chestnut
White, blue and lake.....purple
Blue and lead color.....pearl
White and carmine.....pink
Indigo and lamp black..silver gray
White and lamp black..lead color
Black and venetian red..chocolate
White and green.....bright green
Purple and white...French white
Light and dark green..dark green
White and green.....pea green
White and emerald green.....
.....brilliant green
Red and yellow.....orange
White and yellow.....straw color
White, blue and black..pearl gray
White, lake and vermillion.....
.....flesh color
Umber, white and venetian red
.....drab
White, yellow and venetian red .....cream
Red, blue and black.....olive
Yellow, white, little red.....buff

—T. R. Nall.

Devoted to—
Questions
Answers
Suggestions
Comments and
Discussions on
Specific Problems

Questions and Answers

Information Service

Every issue of *Industrial Finishing* contains a wealth of practical information on various subjects of interest to users of finishes and finishing equipment, but from time to time new problems and questions arise, which demand prompt and authentic information. *Industrial Finishing* is in position to service inquiries, and the editor invites all individuals and concerns in the industry to make known their wants. Every effort will be made to supply the information desired, at no cost to you.

Questions are invited in regard to:

Finishing-room troubles or problems;
Where to obtain certain materials, supplies or equipment;
What methods or materials to use for certain results.

Additional comments or suggestions regarding questions, answers or articles appearing in this section, are invited.

Questions and Answers

What Strange Finish on This Furniture

One of our customers has several pieces of furniture made of curly maple and cherry, to be refinished natural to match up with another piece of furniture which was refinished in an out-of-town shop. The finish on this puzzles us somewhat as it is neither varnish or lacquer. The owner says it is some kind of oil finish which was rubbed or polished with graphite. Sounds funny to us. It is a good looking finish, drying without gloss and is very smooth. Have you ever heard or seen such a finish? Any pointers you can give us will be greatly appreciated.—A. W. W.

One of the oldest systems of finishing wood was to saturate the wood with linseed oil thinned with turpentine; then the wood was rubbed to a smooth satin luster after the oil had dried. Sometimes graphite or other pigments of similar nature were used to increase the friction and generate more heat during the rubbing operation. This may be the finish you have in mind.

Black piano keys are sometimes finished in a manner similar to this—first by soaking the wood in water and then treating it with a black stain under steam pressure for several hours. The wood is then kiln dried and finally buffed or rubbed to a smooth surface by friction; we understand graphite is sometimes used as an aid in this operation. This gives a finish that is truly a polish on the wood; it does not leave a coating over the wood to become scratched or scarred with age. Considerable patience and experience are required to successfully polish woods by methods similar to these.—I. F.

Colors Used in Crayons

Being users of a considerable quantity of dry colors, dyes, etc., we took interest in the article on page 64 (November issue) and would like to have you send us the list of dyes and manufacturers of same which you have on file for reference. What kind of colors or dyes are generally used in the coloring of chalk crayons, and do manufacturers use the same type of dye and color in the manufacture of wax crayons?—J. G. H.

Chalk crayons are usually colored with pigment colors of various kinds, such as carbon black, chrome orange, ultramarine blue, etc. We understand that colored pigments are mixed with the chalk and other ingredients before the crayons are moulded, so as to get a uniform distribution of color.

Wax crayons may be made of pigment colors, in some instances, but we understand that in most cases oil soluble dyes are used as the coloring material. The dye is dissolved and added to the wax composition while it is liquid, so it is uniformly distributed throughout the crayon.—I. F.

BEAUTY

BEAUTY is a quality that is admired and applauded by everybody—everywhere. It may be the admiration of the human figure, or it may be the eager appreciation of the finish on an exquisite piece of furniture.

The consideration of beauty alone is sometimes disastrous. Take the furniture manufacturer, for instance. He must look further than just to beauty. He must, in addition, consider durability. That's why Rockford Varnish Company lacquers are so often chosen by discriminating manufacturers.

If you want a lacquer that is durable as well as beautiful—a lacquer that does a real job—that gives lasting customer satisfaction—send us a trial order today, and let our product prove its merit.

"No Tampering with Quality"

The
ROCKFORD VARNISH
Company
ROCKFORD, ILL.

Mahogany Finishing Problems

In the November issue on page 64, you have mentioned several formulas for stain mixing, namely, brown mahogany, red, and light brown. What dyes can I use to produce a rich walnut on the brown? Can I buy the dyes locally or use substitute dyes? How can I finish woods like Philippine mahogany, when using water stain, and keep the grain from raising?—F. X. W.

There is no known method of staining Philippine mahogany, or for that matter any other wood, with water stain, without some raising of the grain. If this problem could be solved, finishing operations would be simplified in many factories. It is one of the laws of nature that wood fibers absorb moisture quickly and easily, and when they do absorb moisture it is inevitable that they will swell or raise.

To reduce the amount of grain raising, it is good practice to sponge the wood with warm water several hours before the staining operation. Sometimes a little glue is mixed in the water to stiffen the fibers after they are raised. When the wood is surface dry, it should be well sanded to remove all raised or loose fibers; then the water stain may be applied.

On certain grades of work, the grain raising will not be too great to proceed with the finishing operations without sanding, but for all medium or high grade work, a wash coat of shellac (made by reducing one part of 4-lb. cut shellac with seven or eight parts of denatured alcohol) should be applied after the stain is thoroughly dry. This will stiffen the raised fibers and seal the surface of the wood. When the shellac coat has dried about five hours it should be sanded lightly to remove all raised fibers, but the sanding pressure should be light to avoid breaking loose new fibers or cutting through the stain coat.

Spirit stains raise the grain of wood almost as much as water stains and are not permanent in color when exposed to light. Oil stains do not raise the grain of the wood, but they are very fugitive to light. Both spirit and oil stains are soluble in shellac or lacquer coats applied over them, and will "bleed" into the finishing coats. Permanent colors of certain shades can be obtained in oil stains but the selection of colors is rather limited, especially in the reddish or warm brown tones.—F. M. Duncan.

Finishing Lighting Fixtures

A manufacturer of ornamental, electric-lighting fixtures has sent to the office of INDUSTRIAL FINISHING a cast-metal lighting-fixture bracket, which is finished with a primer coat (probably by dipping) followed by one or two sprayed coats of cream-colored enamel or lacquer enamel. Raised portions are striped in gold bronze and the completed job is probably finished in clear varnish or lacquer. The concern wants to know how the finishing is done.

Lighting-fixture brackets are usually finished with lacquer enamels applied directly over the bare metal, or over a suitable primer which is usually, but not always, constructed on a lacquer base. Regardless of whether a primer is used, the metal must be clean and free from grease, oil or other contaminating material be-

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White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.

fore the first coat is applied, if good adhesion is desired.

An acid cleaning bath is often used for this purpose, using a cyanide solution or a weak acid solution. Following this, the pieces are put through a hot water bath to rinse off the cleaning solution; then they are dried by tumbling in dry sawdust. Particles of sawdust, which adhere to the surfaces, are brushed off and the brackets are coated as quickly as convenient. Care must be exercised in handling the articles after cleansing, to avoid greasy finger prints. Workmen are sometimes obliged to wear clean canvas gloves to prevent finger printing.

The primer or lacquer enamel is applied by dipping or spraying, according to the size and shape of the piece and the quality of work desired. The spraying method is used more frequently than the dipping method. Lacquer enamels for lighting fixtures are obtainable from all reliable lacquer manufacturers.

Sometimes only one coat of lacquer enamel is applied, the spray operator going over the surface repeatedly until a solid covering is obtained. In other cases, two or more separate coats of lacquer enamel are applied; these coats may be of the same composition or the top coat may be more lustrous than the bottom coat.

Decorations are usually applied in one of four different ways. One system is to spray contrasting or harmonizing shades of lacquer enamel on certain parts of the fixture, using a small spray gun for this purpose.

Another method is to coat the article with a paste color, such as color ground in japan or color ground in oil, which has been reduced to a thin consistency with naphtha. This antiquing or shading color is then wiped off the raised portions with a cloth barely dampened with naptha. This leaves the antique color showing in the low places and the lacquer enamel color showing on the raised places.

This system of antiquing may be varied by lightly wiping the article with a cloth or soft brush on which just a little japan color or oil color has been placed. This leaves the antiquing color only on the raised places and allows the lacquer enamel color to show in the depressed portions. Gold decorations are often applied in this way, using gold bronze powders mixed with a little bronzing liquid.

The two last named systems are successful only where the surface has raised or depressed designs. The fourth system is to hand color or stripe certain portions of the surface with brushing lacquers or paste colors.

On low priced work, no protective coat of clear lacquer is applied over the decorations, but on higher grade work a coat of clear lacquer is sprayed on. This may be either a glossy or a flat lacquer. Such a coat seals the decorations and prevents them from being wiped off when the fixtures are washed or wiped during cleaning operations, after being installed.—R. L. Masterson.

A most fortunate stage of lacquer development is observed in the refinement that manufacturers have imparted to the composition of the under-surface materials, particularly for metal finishing. This has effected a great saving of labor in sandpapering work, and reduction and refining work generally.

Finishing Aromatic Cedar

I am having some trouble with the finishing materials used on fur storage safes. These safes are made of steel and the two sides and back are lined with cedar. I have finished the doors with different varnishes and lacquers, and find the fumes of cedar affect only the inside of the door. These fumes cause the finishing material to become tacky. I would appreciate it if you will tell me just what material or what method to use to overcome this, as the cedar can not be varnished, because by doing this, it naturally would not keep moths away.—R. F.

The oil in cedar wood is of a non-drying variety, but it has a solvent action on most varnishes or lacquers. Small quantities of this oil are given off the uncoated cedar wood into the air of the fur storage safe. When the air comes in contact with the steel door—which is the coldest surface in the safe—some of this oil is deposited on the door. The oil itself is of a sticky nature and if a sufficient film were deposited the effect mentioned would be produced, even though the finish were not softened.

In the manufacture of household cedar chests, pure white shellac—applied in several thin even coats—has been found to resist the cedar oil to the greatest extent, although certain lacquers also have quite remarkable resistance. It might help if the insides of the doors were coated with several coats of pure white shellac.

If the doors are removable and are so constructed as to withstand a temperature of about 400-deg. F. for a period of about

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It has BODY
Easily Rubbed
Easily Polished
Low Priced

OUR GUARANTEE
Send for five gallons—If not as we claim, return it.

Jamestown Wood Finishing Co.
Jamestown, N. Y.

STAINS FILLERS J C W F PAINTS

an hour, it might be better to coat them with two or three coats of black baking japan. This would not be readily softened by the cedar oil.—I. F.

Sun Room Cabinets Brush-Lacquered

I have a job to finish oak on the natural wood for a sun room where, at times, it is very hot. There are 14 cabinets and 4 radiators cased in and fastened to the walls; they have tops from 6-ft. to 12-ft. in length. The customer wants this job finished in lacquer. I can not take in a spraying outfit, so the lacquer must be brushed on. This is a very particular and extra fine piece of work. I want to use the very best materials, and wish to know the proper way to have this rubbed so it will look like a motor car finish when done; also what to use when rubbing.—W. J. C.

Brushing lacquers, both clear and colored, are now obtainable with sufficiently easy-working qualities that an experienced brush hand should have little or no trouble in finishing the job mentioned. In fact, I know of at least one large piano dealer who refinishes all piano cases, both upright and grand, with brushing lacquers and gets, in four or five coats, a job that rivals the finish on new factory-finished cases.

If the work is to be done in a stained or natural shade, the wood should be filled with a suitable shade of paste wood-filler containing silex and a hard-drying liquid to fill the pores of the wood. This should be brushed on in a creamy consistency and allowed to set 15 or 20 minutes; then it may be wiped off with

burlap or some similar coarse material, wiping across the grain of wood.

The filler should dry 48 hours. Then brush on four or five coats of a good grade of clear lacquer, using a full wet brush and flowing on the lacquer rather than brushing it out too much. At least five hours, and preferably overnight, should be allowed between coats.

Where a solid color finish is wanted, paint-undercoater of the desired shade should be brushed on in two or three coats, allowing each coat to dry overnight. When the last coat is dry the surface should be sanded smooth. Then two or more coats of colored brushing lacquer should be applied in a manner similar to that described for clear lacquer.

After the lacquer coats (whether clear or colored) have dried 24 or 48 hours, they can be sanded smooth with No. 400 grit sandpaper, using water or a light mineral oil as a lubricant.

The surface should be finished off with FF pumice stone and oil, if a dull rubbed finish is wanted. Rottenstone and oil can be used to finish off where a polished finish is wanted, or one of the commercial lacquer polishes (similar to those used for lacquered automobiles) can be used to obtain the final polish, after the surface has been sanded or rubbed smooth.—E. M. F.

Those Mahogany Streaks

Referring to my article entitled "Reproducing Mahogany Grain on Metal," starting on page 90, December issue, I think perhaps my directions on streaking may be misunderstood where at about the middle of the first column on page 92 the article reads: "Place

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Rubbed Varnish Job
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Saving in Finishing
Costs

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A MARVELOUS
NEW FINISH—Combining the Qualities of SHELLAC—LACQUER and VARNISH.

The ideal finishing material for furniture, radio and cabinet manufacturers. It's the remedy for present day finishing troubles.

Tough—lustrous—requires little sanding—dries fast—will spray-brush or dip.

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Manufacturers of
VARNISHES—LACQUERS—STAINS—ENAMELS—SHELLAC

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Hide your material imperfections,—metal or wood,—with liberal spreading qualities of varnish-enamel and the quick drying of lacquers.

HAF-AMEL saves in many ways, and still gives that perfect smoothness, gloss and ready flowing.

HAF-AMEL has three to one coverage with lacquer, and your product can be wrapped for shipment in one hour.

White or colors.

More and Better Coverage for Less Money.

Do not delay in making tests and comparing results with other costs.

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WM. S. HATTEN CO.

Manufacturers of

Paint, Varnish, Enamel, Lacquer

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the streaks from one to two inches apart, according to the size of the surface and use these proportions on the larger surfaces."

This should be to the effect that *the streaks on larger surfaces should be a greater distance apart and somewhat heavier than on the smaller surfaces.* —S. C.

Do You Sand Filler?

Referring to the article entitled "Defective Furniture Finishing" in the December issue, I notice the author mentions the staining, filling, shellacing and varnishing of wood. He states at the bottom of page 12 and at the top of page 14 that the thorough drying of wood fillers is desirable before sandpapering and also mentions something about the filler not being sanded smoothly.

The sandpapering of wood filler over stained surfaces is a new one on me; kindly let us have further details!

The regular method of applying wood fillers over stained surfaces is usually with a brush; then the job is allowed to stand approximately 20 minutes until it becomes set, at which time it is wiped off thoroughly across the grain with sea moss or curled hair. This leaves the pores of the wood filled. The surface usually is allowed to dry over night before shellacing.

If there is an error in the article in December issue, it calls for a correction, as this would be misleading to the practical wood finishers.—C. S.

Surfaces For Wood Finishing

In wood finishing, surfacing is known under at least three names —first-coating, priming and surfacing. Regardless of what it is called, its purpose is to prevent absorption of succeeding coats of varnish. Shellac varnish is one of the best surfacers.

A surfacer should be flowed on, and should not be worked out "dry," if a smooth surface is expected.

Rosin in the surfacer will generally cause deterioration of the varnish coats, but such surfacer is hardly ever used on high grade work.

Any good varnish will do for a first-coater or surfacer, but it must be well thinned out. Surfacing usually follows filling, in order that it may hold out the varnish coats which cover it.

Liquid filler may be used as a surfacer, but it is not to be used over a paste-filled surface. It is rather a filler than a surfacer.

Manufacturers of fine furniture often use shellac varnish over a filler, as it saves a coat of good varnish, while at the same time giving a more level surface than liquid filler would give when applied to the bare wood as a filler.

Brushing on the stain coat.

Tru-Tone Stains

There is a fine Tru-Tone Stain for every finish and every wood.

Tru-Tones not only bring out the best in fine woods, but they dress up and beautify plainer materials.

Send for sample.
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This should answer your lacquer problems where the fire hazard is of great concern.

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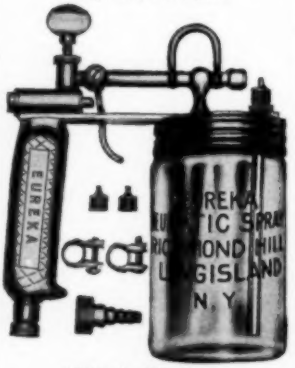

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A cheap surfacer can be made from one gallon of dextrine solution with a half-gallon of waterglass, with the addition of a very little raw linseed oil to cause it to work easier. This is not a filler, but a first-coater or surfacer, being particularly adapted for use on redwood.

The excellence of shellac lies chiefly in the fact that it effectually seals the pores of the wood, and leaves no gummy mass on the surface, to be removed with sandpaper. Some finishers think shellac is not so good under varnish, being of the opinion that it does not hold varnish well. In this connection it is well to rub down the shellac with sandpaper, to give "tooth" to the surface, in which case there is no doubt about it holding the varnish coat.

Church Pew Finishing

By adding one pound of finely pulverized silica to a gallon of varnish, and then thinning the varnish to the consistency of shellac varnish, you will get a very good surfacer. It flows out readily and easily, spreads nicely, and sandpapers well. Forty-eight hours after the application, rub it down well. One or two coats of good varnish on top of this rubbed-down surfacer will yield the best satisfaction; it will prove especially satisfactory on church seats or pews, where the varnisher finds so much trouble.

Some finishers object to a surfacer that contains a considerable quantity of silica, saying that it settles badly upon standing, but by mixing a batch as required, this trouble may be prevented. Silica in a surfacer causes it to dry flat, for it will flat any varnish, giving a surface like rock.

Perhaps it is questionable to tell how to make "cheap" surfac-

ers, but then occasions arise when it is desirable to use them, the exact nature of the necessity not requiring detailed explanation here. Take one gallon of pure Damar varnish (which is colorless and prepared in turpentine) and add to it one gallon of turpentine.

This material has been used on some church finishing work, in place of liquid filler which stained the wood too much. The Damar, being perfectly colorless, did not stain, while at the same time it gave a surface that did not require sandpapering. Two coats of good varnish on such Damar filler, gave a satisfactory finish.

There is a very minute quantity of water in turpentine spirits, but the amount is too small to do any harm. In some liquid fillers there is water enough to raise the grain of wood.—A. A. Kelly.

Wood Finishing—Staining

It is understood, of course, that staining can only be done on the bare wood, and the cleaner and smoother the wood, the better the finish will be.

First sandpaper the wood to be finished smoothly, being careful not to scratch the surface or edges. Use fine sandpaper and rub with the grain of the wood. Remove all dust with a brush, and the wood is ready to stain.

There are three kinds of stain —vegetable, mineral, and aniline, the latter being more generally used than the others. For some purposes the mineral stains—such as sienna to make oak stain, burnt umber to make walnut, and so on —are more desirable, because they not only give the color desired but are much more permanent than the anilines. A great deal de-

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OIL WALNUT
OIL GREEN

These will not bleed under lacquer

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Where finish is damaged, the quickest and easiest way to permanently repair is with

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This is melted in the hole, dent or scratch. The damaged place is then rubbed down and polished. The Shellac will not shrink nor check and is extremely tough. It is indeed the easiest, the quickest, the most economical and only permanently satisfactory method to repair serious injury to any finish

Stick Shellac color card and booklet "How to Repair Varnished Surfaces" will be sent you free upon request.

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CHICAGO makers of ALAKA PHILADELPHIA

pends upon the amount of exposure to the sun or strong sunlight, as to the lasting qualities of any color.

Mineral Colors

Mineral colors used in staining are usually prepared with water, though sometimes they are mixed with oil or turpentine. Water is the more penetrating and, of course, it is cheaper. Turpentine ranks next in penetrating power, while linseed oil is the least penetrating of them all.

There are on the market many fine penetrating wood stains and, for general use, they are to be recommended. Oil stains brush out best on soft woods; water stains do not, but on hard woods oil stain does not penetrate well, while water stain does. The best mineral pigments to use with oil for stain are Vandyke brown, burnt and raw sienna, and burnt and raw umber.

Aniline Dyes

If you wish to mix your own stains and want to use aniline dyes, get what is known as "water soluble", for there are some that will not dissolve in water. The anilines must be used in vessels made of glass or glazed porcelain —never in metal vessels. Oil stain does nicely on a hard pine floor, for the wood is hard in general. For oak, mix a little burnt umber with raw sienna, both ground in oil, and add a little drying japan.

Apply this stain with a common paint brush and, after the job has stood a little while, take a cloth and wipe off the surplus. For instance, after you have done a certain space with the stain, this wiping will remove the stain from the hard or figured parts, except a very little or enough to color the part, and the softer places

will be filled with it. This makes a handsome finish; when dry it may be either varnished or waxed, or varnished with a coat of wax over the varnish.

Oak Staining

The hard pine is done the same way, though not always, as some finishers prefer oiling it and rubbing it well with the oil, which will be the finish. Strong coffee will stain for dark oak, or the oak may be darkened with an alkali, such as potash, fresh lime, ammonia, soda, etc.

The formula for mixing any of the water-soluble aniline stains is four ounces of aniline to three gallons of hot water: The water should be boiling, but the stain must be cold when used. The addition of three half-pints of vinegar will improve the stain.

Weathered oak may be obtained with one of several methods, the simplest being with a solution of iron sulphate in water. Or one ounce of bichromate of potash in one pint of water, alternating with the iron sulphate solution—a coat of each. The iron sulphate is dissolved in an equal amount of water by weight. Let each coat dry well before applying the next. The finish for weathered oak is shellac and wax.

For Old Mahogany

Old mahogany may be imitated with a weak solution of bichromate of potash in water, or by fuming. Weak lime water will antique it, but gives it rather too reddish a tone. The antique effect may be had by means of a mixture of two parts turpentine and one part raw oil, well rubbed into the wood, afterward wiping off dry. Next apply a water solution of bichromate of potash. When this is dry, fill the wood

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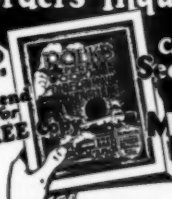

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Artificial sunlight effects are obtained by glowing golden walls and ceiling in the sun room or lounging room. Next to the sun room is a living room in which walls papered with silver are set aglow by dull orange and green lights in alabaster globes.

Then, to carry out the brightness, a yellow carpet with blue suns on both floors. The chairs and tables should be apple green. Shimmering green taffeta curtains provide an illusion of leaves and woods outside. This furnishes, in artistic fashion, a lovely lounging and living room of brightness and cheerfulness, in which to spend a pleasant day when it's raining or foggy and dark outside.—T. R. Nall.

Wood Utilization News

Under the above title and date of Dec. 16th, some remarks are made concerning a manual on the economics of wood utilization in construction. A copy may be had by addressing the Department of Commerce, Washington, D. C.

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